MJA studio

30th November 2018

Planning Services
City of Melville
Attn: Ben Ashwood
10 Almondbury Rd
BOORAGOON WA 6154

Dear Sir,

RE: DEVELOPMENT APPLICATION SUBMISSION – 'SANCTUARY APARTMENTS'

3-5 WREN STREET, MOUNT PLEASANT

MJA Studio, on behalf of our client Developwise, has prepared a Development Application for 47 apartments, associated communal facilities and car parking at 3-5 Wren Street, Mount Pleasant.

Set in the Canning Bridge Activity Centre Precinct, the proposal answers the call for each new project to find a different local story. The built form is inspired by life on the water and the sculptural forms of the local bird life. Landscaping is integrated within the built form, with planting cascading down the front façade. One to Four bedroom apartments cater for a range of future residents, including local downsizers. A residents' gym; lounge and roof garden are provided.

The proposal was presented to the City of Melville Design Review Panel on November 7, 2018. The panel commented on the strengths of the façade articulation and the treatment of the ground plane and landscape zones. Further to comments received at this meeting, the following amendments have been made:

- Sun shades have been incorporated into the east and west facades to assist with solar heat gain and create an improved a sense of privacy between neighbours
- Hand rails are proposed to each side of the access stairs between car parking levels for ease of use
- Wardrobes added to all bedrooms
- A high speed lift has been sourced with proposed a service agreement to mitigate any issues that may arise from a single lift
- Ground floor entry sequence further developed, with visitor bike parking incorporated into the entry plaza

This Development Application consists of the following documents (provided in digital format):

- Application forms
- Certificate of Title(s)
- Architectural drawing set (DA1.00-1.11_Rev A) – MJA Studio
- Development Application '10 Principles' Report – MJA Studio
- Landscape Concept Plans – Culivart
- Public Art Concept Design – Stuart Green Artist, Big Spoon Art Services
- Waste Management Plan – Move Consultants
- Transport Impact Statement and Car Parking Assessment – Move Consultants
- Sustainable Design Assessment Report – Preliminary – Sustainability WA

The proposed 'Sanctuary Apartments' are an elegant, sculptural addition to the Mount Pleasant locale that respond to both the existing and future context. We look forward to working with City in the seeing the realisation of this proposal. Should additional information be required please contact the undersigned.

Yours faithfully,

James Thompson

P.P MJA Studio

WESTERN AUSTRALIA

REGISTER NUMBER	
17/P5031	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
2	15/10/2018

VOLUME 1150 FOLIO 540

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 17 ON PLAN 5031

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

DEVELOPWISE GROUP 2 PTY LTD OF 70C KISHORN ROAD MOUNT PLEASANT WA 6153
(T O026431) REGISTERED 9/11/2018

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. T4376/1938 RESTRICTIVE COVENANT BURDEN. REGISTERED 1/1/1938.
2. *O026432 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA REGISTERED 9/11/2018.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1150-540 (17/P5031)
PREVIOUS TITLE: 1060-2
PROPERTY STREET ADDRESS: 3 WREN ST, MOUNT PLEASANT.
LOCAL GOVERNMENT AUTHORITY: CITY OF MELVILLE

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING O026432.

WESTERN AUSTRALIA

REGISTER NUMBER	
16/P5031	
DUPLICATE EDITION	DATE DUPLICATE ISSUED
3	27/4/2017

VOLUME 1124 FOLIO 600

RECORD OF CERTIFICATE OF TITLE

UNDER THE TRANSFER OF LAND ACT 1893

The person described in the first schedule is the registered proprietor of an estate in fee simple in the land described below subject to the reservations, conditions and depth limit contained in the original grant (if a grant issued) and to the limitations, interests, encumbrances and notifications shown in the second schedule.

REGISTRAR OF TITLES

LAND DESCRIPTION:

LOT 16 ON PLAN 5031

REGISTERED PROPRIETOR:
(FIRST SCHEDULE)

DEVELOPWISE GROUP 2 PTY LTD OF 70C KISHORN ROAD MOUNT PLEASANT WA 6153
(T O026430) REGISTERED 9/11/2018

LIMITATIONS, INTERESTS, ENCUMBRANCES AND NOTIFICATIONS:
(SECOND SCHEDULE)

1. T14123/1947 RESTRICTIVE COVENANT BURDEN. REGISTERED 1/1/1947.
   L901866 RESTRICTIVE COVENANT T14123/1947 MODIFIED REGISTERED 5/4/2012.
2. *O026432 MORTGAGE TO COMMONWEALTH BANK OF AUSTRALIA REGISTERED 9/11/2018.

Warning: A current search of the sketch of the land should be obtained where detail of position, dimensions or area of the lot is required.
* Any entries preceded by an asterisk may not appear on the current edition of the duplicate certificate of title.
Lot as described in the land description may be a lot or location.

----------END OF CERTIFICATE OF TITLE----------

STATEMENTS:

The statements set out below are not intended to be nor should they be relied on as substitutes for inspection of the land and the relevant documents or for local government, legal, surveying or other professional advice.

SKETCH OF LAND: 1124-600 (16/P5031)
PREVIOUS TITLE: 1104-607
PROPERTY STREET ADDRESS: 5 WREN ST, MOUNT PLEASANT.
LOCAL GOVERNMENT AUTHORITY: CITY OF MELVILLE

NOTE 1: DUPLICATE CERTIFICATE OF TITLE NOT ISSUED AS REQUESTED BY DEALING O026432.

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

Sustainable Design Assessment Report - PRELIMINARY

Date:	28th November 2018
Our Reference:	17294
Project Address:	3-5 Wren Street, Mount Pleasant
BCA Climate Zone:	5
Building Class:	2
Report Commissioned By:	Developwise

Report Details		
Report Author: Nathan Peart	GBCA Acc. No.: 49264	Signature:
Revision Date: -	Reason for Revision	

Phone: 08 9555 9444 FAX: 08 9200 5654 Email: rate@s-wa.com.au Web: www.s-wa.com.au

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

SustainabilityWA

Contents

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1. Project Information

This report has been commissioned to assess the proposal at 3-5 Wren Street, Mount Pleasant against the sustainability objectives contained in the Canning Bridge Activity Centre Plan. The proposal is over two existing developed sites with a combined land area of 2027.9m². The proposed development contains basement level carparking, resident lounge, lobby, gym, 47 residential apartments along with common space and roof deck on the upper level.

Figure 1: Subject Site

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71 Allnutt Street Mandurah WA 6210
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2. Compliance overview

The site is within the Ogilvie Quarter (Q2) and is required to obtain the sustainability objectives shown in Element 11 of the Canning Bridge Activity Centre Plan (CBACP). This development complies with Element 11 using the following passive solar principles:

- Shading over all glazing.
- Optimisation of cross ventilation.
- Optimisation of natural light.

Additionally, the development is compliant with the sustainability provisions of the CBACP by attaining a design rating that is equivalent of 4 stars under the Design and As Built calculator of the GBCA, or minimum of 45 points.

The GBCA design and as built tool uses points to classify the development into a star rating using the following:

Table 1: Green Star Rating Scale

% of available points	Rating	Outcome
Less than 10	Zero Star	Assessed
10-19	One Star	Minimum Practice
20-29	Two Star	Average Practice
30-44	Three Star	Good Practice
45-59	Four Star	Australian Best Practice
60-74	Five Star	Australian Excellence
75+	Six Star	World Leadership

Source: Green Star – Design & As Built v1.2 Submission Guidelines

This development is capable of meeting the 4-star GBCA requirement, given that consultants engaged, and changes are undertaken to be included in the working drawings to verify compliance with the items detailed in Section 3 of this report and Appendix A attached.

3. Green Star overview

The following changes/inclusions are required to ensure compliance with this report and the Green Star requirements. Disciplines affected by these requirements are shown in Appendix F. Further information on each of these requirements is available in 5. Green Star - Summary of requirements and the GBCA submission guidelines.

For a full list of points claimed please see Green Star Design and As Built Scorecard attached as Appendix A. Table 2 is a summary of actions required and comments on how they relate to this project. Inclusion in Table 2 does not guarantee point is clamed or claimable. Further guidelines on requirements for each point are shown in Appendix G summary of requirements.

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Table 2: Actions and comments

GBCA Design and as Built Clause	Action Required	Comments on point viability.
1.0	Accredited Professional	Sustainability WA contracted for Green Star review.
2.0	Environmental Performance Targets	Design Intent report to be developed
2.1	Services and Maintainability Review	A services and maintainability review is to be conducted by the design team. Input required from any consultants involved in the project.
2.2	Building Commissioning	A services and maintainability review will be conducted by the lead contractor as part of the construction process. Input required from any consultants involved in the project.
2.3	Building Systems Tuning	Building systems will required to be tuned by lead contractor for electrical and hydraulic systems.
2.4	Independent Commissioning Agent	Not viable for this size project.
3.1	Implementation of a Climate Adaptation Plan	Not viable for this size project.
4.1	Building Information	Building information to be developed by design team as per GBCA guidelines
5.1	Environmental Building Performance	No metering system will be installed – therefore this point is not available.
5.2	End of Life Waste Performance	Strata company to commit to extending common area fittings to 10 years.
6.1	Monitoring Systems – Incorporate an automated monitoring system for Electricity, Gas and Water that shows where the resources are being used and estimated energy consumption.	Not used for this project.
7.0	Environmental Management Plan	Pre-requisite – not required
7.1	Formalised Environmental Management System	No metering system will be installed – therefore this point is not available.
8.0	Operational Waste – Nomination of waste area on architectural plans that includes General Waste, General Recycling and one other recycling component prepared by waste management consultant	Not used for this project.
9.1	Ventilation System Attributes – Verification that the system has been designed to ensure, entry of outdoor pollutants is mitigated; system is designed for ease of maintenance and cleaning; and specification states system to be cleaned prior to occupation and use	Ventilation system to comply with GBCA requirements
9.2	Provision of Outdoor Air at a rate 50% to 100% greater than the minimum required by AS 1668.2:2012	HVAC system TBC so not included at this point
9.3	Exhaust or Elimination of Pollutants- Ensure kitchens and photocopy/print rooms are exhausted separately to AS1668.2:2012.	Ventilation system to comply with GBCA requirements
10.1	Internal Noise Levels	Acoustic Consultant to confirm
10.2	Reverberation	Acoustic Consultant to confirm
10.3	Acoustic Separation – Internal partitions between offices, meeting rooms etc. to have a sound reduction of R_w45 for partitions without a door or R_w35 for partitions with a door.	Acoustic Consultant to confirm
11.0	Minimum Lighting Comfort – All lights to primary and secondary nominated spaces to have light sources must have flicker free lighting and a minimum Colour Rendering Index (CRI) of 80	Electrician/Lighting contractor to ensure compliance
11.1	General Illuminance and Glare Reduction – Lighting to comply with relevant table of AS/NZS1680.2 demonstrating best practice. All bare light sources must be fitted with baffles, louvers, translucent diffusers, or other means that obscures the direct light source from all viewing angles of occupants.	Electrician/Lighting contractor to ensure compliance
11.2	Surface Illuminance - surface reflectance for ceilings of at least 0.75(0.75 = matte white), ceiling area to have an average surface illuminance of at least 30% of the lighting levels on the working plane.	Electrician/Lighting contractor to ensure compliance

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11.3	Localised Lighting Control – occupants must have the ability to turn the lights on and off and adjust light levels in their immediate environment.	Electrician/Lighting contractor to ensure compliance
12.0	Glare Reduction – Glazing in all primary spaces to have blinds, screens, fixed devices to reduce glare	Included
12.1	Daylight – Calculator	Completed by Sustainability WA
12.2	Views - Calculator	Completed by Sustainability WA
13.1	Paints, Adhesives, Sealants and Carpets - At least 95% of all internally applied paints, adhesives, sealants (by volume) or carpets (by area) meet the total VOC limits (See appendix B and C)	Specification to be updated to ensure compliance
13.2	Engineered Wood Products at least 95% (by area) of all engineered wood products meet the formaldehyde emission limits specified by in Appendix D.	Specification to be updated to ensure compliance
14.1	Thermal Comfort	N/A
14.2	Advanced Thermal Comfort	Average 8 Star rating required.
15A.2	GGE – NatHERS Pathway	Average 8 Star NatHERS rating required Domestic Hot Water Systems – HWS to be gas, Heat pump or solar. (Confirmation of HWS and applicability of this item required) Lighting power to be reduced by 10% Independent light swutching to all areas Lighting to common area to have auto control HVAC systems to be min. 3.5 stars All appliances to be within 1 star of maximum available. Extra points available for the use of Greenpower
16A	Prescriptive Pathway – On-site Energy Generation – On-site renewable energy or on-site generation sources reduces the peak electricity demand by at least 15%. Alternatively, Accredited Green power option can be used. See Table 2 15.6A option 1.	Included
17B.1	Access by Public Transport	Calculator by Sustainability WA
17B.2	Reduced Car Parking Provision	Not viable
17B.3	Low Emission Vehicle Infrastructure – Motorcycle bays and Dedicated fuel-efficient vehicle bays to be provided.	Not practical for this development.
17B.4	Active Transport Facilities – Expected regular occupancy to be advised – 7.5% secure bicycle parking required	Allow for secure bicycle parking bays – expected occupancy TBA
17B.5	Walkable Neighbourhoods	Calculator by Sustainability WA
18B.1	Sanitary Fixture Efficiency – Water efficiency fixtures to be specified as per 18B.1 in Table 4	Fixtures as per Appendix G
18B.2	Rainwater Reuse. Water to be reused in garden or other on site use.	Not included at this stage. An extra point is available for a 60,000L water tank.
18B.3	Heat Rejection – Confirm HVAC system specified does not use water for heat rejection	No Water will be used in HVAC systems
18B.4	Landscape Irrigation - either drip irrigation with moisture sensor override specified, or where no potable water is used for irrigation.	Landscape design to include requirements.
18B.5	Fire System Test Water – Specify fire protection system does not expel water for testing or includes temporary storage and shut off valves for each floor.	Not Applicable - No fire system installed
19B.1	Concrete	Specify the use of Hansons or BGC Green Concrete or similar
19B.2	Steel	Not viable
19B.3	Building Reuse	Not applicable
19B.4	Structural Timber	Not applicable
20.1	Structural and Reinforcing Steel	Specify steel to be sourced from a Responsible Steel Maker (RSI) and 60% is produced using energy reducing processes
20.2	Timber Products	All timber including formwork, structural, non-structural cladding, linings, joinery, furniture o Be PEFC or FSC International certified
20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables – Specify no PVC to be used or PVC used meets the GBCA	PVC products to be registered at: http://www.vinyl.org.au/in-greenstar/best-practice-

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	Best Practice Guidelines for PVC	pvc-product-register
21.1	Product Transparency and Sustainability	
22A	Waste - Construction	Cleanaway or similar to be contracted to dispose of construction waste in a manner that complies with Green Star requirements
23.0	Endangered, Threatened or Vulnerable Species	None on site
23.1	Ecological Value	Calculator by Sustainability.
24.0	Conditional Requirement	Complies
24.1	Reuse of Land	Complies
24.2	Contamination and Hazardous Materials	Not Applicable
25.0	Heat Island Effect Reduction	Roofing materials to have a minimum SRI of 82. See http://www.steel.com.au/products/coated-steel/colorbond-steel/commercial-colours
26.1	Stormwater Peak Discharge. Confirm post-development peak Average Recurrence Interval (ARI) event discharge from the site does not exceed the pre-development peak ARI event discharge	Design by hydraulics consultant to include allowance.
26.2	Stormwater Pollution Targets.	Gross pollutant trap required to comply with Appendix E
27.0	Light Pollution to Neighbouring Bodies –	Electrical consultant/contractor to ensure that outdoor light of project complies with S 4282:1997 Control of the obtrusive effects of outdoor lighting
27.1	Light Pollution to Night Sky	Electrical consultant/contractor to ensure no external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation
28.0	Legionella Impacts from Cooling Systems - Cooling system to have waterless heat-rejection systems or a water-based heat rejection systems that includes measures for Legionella control and Risk Management	No water to be used in cooling system
29.0	Refrigerants Impacts – HVAC system to comply with TSDEI targets or, meet ODP and GWP targets or, have no refrigerants used.	Split systems should comply with this requirement. Require size of systems to be used and refrigerant charge to perform calculations.
30A	Innovative Technology or Process	
30B	Market Transformation	
30C	Improving on Green Star Benchmarks	
30D	Innovation Challenge	
30E	Global Sustainability	

4. Conclusion

It is the view of Sustainability WA that this project can meet the sustainability requirements of the Canning Bridge Activity Centre Plan. This development complies with Element 11 by providing shading over all glazing, optimisation of cross ventilation, and optimisation of natural light. Additionally, the development can attain a design rating that is equivalent of 4 stars under the Design and As Built calculator of the GBCA.

All items discussed in the report will need to be verified at working drawings stage to ensure that the items have been implemented in the drawings and accompanying reports by consultants.

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5. Appendices

Appendix A: Green Star Design and As Built Scorecard for 3-5 Wren Street, Mount Pleasant

Green Star - Design & As Built Scorecard

Project:	**Wren St Apartments**
Targeted Rating:	4 Star - Best Practice

Core Points Available	Total Score Targeted
100	50.5

CATEGORY / CREDIT	AIM OF THE CREDIT / SELECTION	CODE	CREDIT CRITERIA	POINTS AVAILABLE	POINTS TARGETED
Management				14	
Green Star Accredited Professional	To recognise the appointment and active involvement of a Green Star Accredited Professional in order to ensure that the rating tool is applied effectively and as intended.	1.0	Accredited Professional	1	1
Commissioning and Tuning	To encourage and recognise commissioning, handover and tuning initiatives that ensure all building services operate to their full potential.	2.0	Environmental Performance Targets	-	Complies
		2.1	Services and Maintainability Review	1	1
		2.2	Building Commissioning	1	1
		2.3	Building Systems Tuning	1	1
		2.4	Independent Commissioning Agent	1	
Adaptation and Resilience	To encourage and recognise projects that are resilient to the impacts of a changing climate and natural disasters.	3.1	Implementation of a Climate Adaptation Plan	2	
Building Information	To recognise the development and provision of building information that facilitates understanding of a building's systems, operation and maintenance requirements, and environmental targets to enable the optimised performance.	4.1	Building Information	1	1
Commitment to Performance	To recognise practices that encourage building owners, building occupants and facilities management teams to set targets and monitor environmental performance in a collaborative way.	5.1	Environmental Building Performance	1	
		5.2	End of Life Waste Performance	1	1
Metering and Monitoring	To recognise the implementation of effective energy and water metering and monitoring systems.	6.0	Metering	-	Complies
		6.1	Monitoring Systems	1	
Responsible Building Practices	To reward projects that use best practice formal environmental management procedures during construction.	7.0	Environmental Management Plan	-	
		7.1	Formalised Environmental Management System	1	
		7.2	High Quality Staff Support	1	
Operational Waste	Performance Pathway	8A	Performance Pathway - Specialist Plan	1	
		8B	Prescriptive Pathway - Facilities	-	
Total				14	6

Indoor Environment Quality				17	
Indoor Air Quality	To recognise projects that provide high air quality to occupants.	9.1	Ventilation System Attributes	1	1
		9.2	Provision of Outdoor Air	2	
		9.3	Exhaust or Elimination of Pollutants	1	1
Acoustic Comfort	To reward projects that provide appropriate and comfortable acoustic conditions for occupants.	10.1	Internal Noise Levels	1	1
		10.2	Reverberation	1	1
		10.3	Acoustic Separation	1	1

Lighting Comfort	To encourage and recognise well-lit spaces that provide a high degree of comfort to users.	11.0	Minimum Lighting Comfort	-	Complies
		11.1	General Illuminance and Glare Reduction	1	1
		11.2	Surface Illuminance	1	1
		11.3	Localised Lighting Control	1	1
Visual Comfort	To recognise the delivery of well-lit spaces that provide high levels of visual comfort to building occupants.	12.0	Glare Reduction	-	Complies
		12.1	Daylight	2	2
		12.2	Views	1	
Indoor Pollutants	To recognise projects that safeguard occupant health through the reduction in internal air pollutant levels.	13.1	Paints, Adhesives, Sealants and Carpets	1	1
		13.2	Engineered Wood Products	1	1
Thermal Comfort	To encourage and recognise projects that achieve high levels of thermal comfort.	14.1	Thermal Comfort	1	1
		14.2	Advanced Thermal Comfort	1	1
Total				**17**	**14**

Energy				**22**	
Greenhouse Gas Emissions	B. NatHERS Pathway	15A.0	Conditional Requirement: Prescriptive Pathway	-	
		15A.1	Building Envelope	-	
		15A.2	Glazing	-	
		15A.3	Lighting	-	
		15A.4	Ventilation and Air-conditioning	-	
		15A.5	Domestic Hot Water Systems	-	
		15A.6	Accredited GreenPower	-	
		15B.0	Conditional Requirement: NatHERS Pathway	-	Complies
		15B.1	NatHERS Pathway	16	9.5
		15C.0	Conditional Requirement: BASIX Pathway	-	
		15C.1	BASIX Pathway	-	
		15D.0	Conditional Requirement: NABERS Pathway	-	
		15D.1	NABERS Energy Commitment Agreement Pathway	-	
		15E.0	Conditional Requirement: Reference Building Pathway	-	
		15E.1	Comparison to a Reference Building Pathway	-	
Peak Electricity Demand Reduction	Prescriptive Pathway	16A	Prescriptive Pathway - On-site Energy Generation	1	1
		16B	Performance Pathway - Reference Building	-	
Total				**17**	**10.5**

Transport					
				10	
Sustainable Transport	Prescriptive Pathway	17A.1	Performance Pathway	0	
		17B.1	Access by Public Transport	3	1
		17B.2	Reduced Car Parking Provision	1	
		17B.3	Low Emission Vehicle Infrastructure	1	
		17B.4	Active Transport Facilities	1	1
		17B.5	Walkable Neighbourhoods	1	
Total				7	2

Water					
				12	
Potable Water	Prescriptive Pathway	18A.1	Potable Water - Performance Pathway	0	
		18B.1	Sanitary Fixture Efficiency	1	1
		18B.2	Rainwater Reuse	1	
		18B.3	Heat Rejection	2	2
		18B.4	Landscape Irrigation	1	1
		18B.5	Fire System Test Water	1	
Total				6	4

Materials					
				14	
Life Cycle Impacts	Prescriptive Pathway - Life Cycle Impacts	19A.1	Comparative Life Cycle Assessment	0	
		19A.2	Additional Life Cycle Impact Reporting	4	
		19B.1	Concrete	3	2
		19B.2	Steel	1	1
		19B.3	Building Reuse	4	
		19B.4	Structural Timber	4	
Responsible Building Materials	To reward projects that include materials that are responsibly sourced or have a sustainable supply chain.	20.1	Structural and Reinforcing Steel	1	
		20.2	Timber Products	1	
		20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	1	1
Sustainable Products	To encourage sustainability and transparency in product specification.	21.1	Product Transparency and Sustainability	3	
Construction and Demolition Waste	Fixed Benchmark	22A	Fixed Benchmark	1	1
		22B	Percentage Benchmark	-	

Total				**12**	**5**

Land Use & Ecology				**6**	
Ecological Value	To reward projects that improve the ecological value of their site.	23.0	Endangered, Threatened or Vulnerable Species	-	Complies
		23.1	Ecological Value	3	
Sustainable Sites	To reward projects that choose to develop sites that have limited ecological value, re-use previously developed land and remediate contaminate land.	24.0	Conditional Requirement	-	Complies
		24.1	Reuse of Land	1	1
		24.2	Contamination and Hazardous Materials	1	
Heat Island Effect	To encourage and recognise projects that reduce the contribution of the project site to the heat island effect.	25.0	Heat Island Effect Reduction	1	1
Total				**6**	**2**

Emissions				**5**	
Stormwater	To reward projects that minimise peak stormwater flows and reduce pollutants entering public sewer infrastructure.	26.1	Stormwater Peak Discharge	1	1
		26.2	Stormwater Pollution Targets	1	1
Light Pollution	To reward projects that minimise light pollution.	27.0	Light Pollution to Neighbouring Bodies	-	Complies
		27.1	Light Pollution to Night Sky	1	1
Microbial Control	To recognise projects that implement systems to minimise the impacts associated with harmful microbes in building systems.	28.0	Legionella Impacts from Cooling Systems	1	1
Refrigerant Impacts	To encourage operational practices that minimise the environmental impacts of refrigeration equipment.	29.0	Refrigerants Impacts	1	1
Total				**5**	**5**

Innovation				**10**	
Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.	30A	Innovative Technology or Process		2
Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in	30B	Market Transformation		
Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points.	30C	Improving on Green Star Benchmarks	10	
Innovation Challenge	Where the project addresses an sustainability issue not included within any of the Credits in the existing Green Star rating tools.	30D	Innovation Challenge		
Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star	30E	Global Sustainability		
Total				**10**	**2**

TOTALS	**AVAILABLE**	**TARGETED**
CORE POINTS	**100**	**48.5**
CATEGORY PERCENTAGE SCORE		**48.5**
INNOVATION POINTS	**10**	**2.0**

TOTAL SCORE TARGETED	50.5

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Appendix B: Table 13.1.1: Maximum TVOC Limits for Paints, Adhesives and Sealants

Product Category	Max TVOC content in grams per litre (g/L) of ready to use product.
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16
Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One and two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membranes and sealant, fire retardant sealants and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesives and sealants	100

Appendix C: Carpet Test Standards and TVOC Emissions Limits

Compliance option	Test Protocol	Limit
ASTM D5116	ASTM D5116 - Total VOC limit*	0.5mg/m2 per hour
	ASTM D5116 - 4-PC (4-Phenylcyclohexene)*	0.5mg/m2 per hour
ISO 16000 / EN 13419	ISO 16000 / EN 13419 - TVOC at three days	0.5mg/m2 per hour
ISO 10580 / ISO/TC 219 (Document N238)	ISO 10580 / ISO/TC 219 (Document N238) - TVOC at 24 hours	0.5mg/m2 per hour

*Both limits should be met when testing against ASTM D5116

Appendix D: Table 13.2B: Formaldehyde Emission Limit Values for Engineered Wood Products

Test Protocol	Emmision Limit/Unit of Measurement
AS/NZS 2269:2004, testing procedure AS/NZS 2098.11:2005 method 10 for Plywood	≤1mg/ L
AS/NZS 1859.1:2004 - Particle Board, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1.5 mg/L
AS/NZS 1859.2:2004 - MDF, with use of testing procedure AS/NZS 4266.16:2004 method 16	≤1mg/ L
AS/NZS 4357.4 - Laminated Veneer Lumber (LVL)	≤1mg/ L
Japanese Agricultural Standard MAFF Notification No.701 Appendix Clause 3 (11) - LVL	≤1mg/ L
JIS A 5908:2003- Particle Board and Plywood, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A 5905:2003 - MDF, with use of testing procedure JIS A 1460	≤1mg/ L
JIS A1901 (not applicable to Plywood, applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr
ASTM D5116 (applicable to high pressure laminates and compact laminates)	≤0.1 mg/m²hr
ISO 16000 part 9, 10 and 11 (also known as EN 13419),	≤0.1 mg/m²hr (at 3 days)

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71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

applicable to high pressure laminates and compact laminates	
ASTM D6007	≤0.12mg/m³**
ASTM E1333	≤0.12mg/m³***
EN 717-1 (also known as DIN EN 717-1)	≤0.12mg/m³
EN 717-1 (also known as DIN EN 717-2)	≤0.12mg/m³

*mg/m²hr may also be represented as mg/m²/hr.
**The test report must confirm that the conditions of Table 3 comply for the particular wood product type, the final results must be presented in EN 717-1 equivalent (as presented in the table) using the correlation ratio of 0.98.
***The final results must be presented in EN 717-1 equivalent (as presented in the table), using the correlation ratio of 0.98.

Appendix E: Stormwater Pollution Reduction Targets

Table 26.2 Pollution Reduction Targets

Pollutant	Reduction Target (% of the typical urban annual load)		
	A	B	C
Total Suspended Solids (TSS)[1]	80%	80%	90%
Gross Pollutants	85%	90%	95%
Total Nitrogen (TN)[2]	30%	45%	60%
Total Phosphorus (TP)[2]	30%	60%	70%
Total Petroleum Hydrocarbons[3]	60%	90%	90%
Free Oils[3]	90%	90%	98%

Notes:

1 Load based on the following particulate size distribution (by mass): 20% <20 µm; 20% 20-60 µm; 20% 60-150 µm; 20% 150-400 µm; 20% 400-2000 µm.

2 Load includes particulate and dissolved fraction.

3 This requirement is not applicable where the site contains less than a total of 200m² of uncovered areas where vehicles are likely to transit and/or park e.g. roads, loading docks, refuelling bays, car parking etc.

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Appendix F: Area of responsibility

Green Star Area	Credit No.	Credit Name	Person/Consultant Responsibility								
			Designer	Builder	Mechanical	Electrical	Hydraulic	Acoustic	Structural	Waste	ESD
G.S. Professional	1.0	Accredited Professional									✓
Commissioning and Tuning	2.0	Environmental Performance Targets	✓	✓	✓	✓	✓				
	2.1	Services and Maintainability Review	✓	✓	✓	✓	✓				
	2.2	Building Commissioning	✓	✓	✓	✓	✓				
	2.3	Building Systems Tuning	✓	✓	✓	✓	✓				
	2.4	Independent Commissioning Agent	✓								
Adaptation & Resilience	3.1	Implementation of a Climate Adaptation Plan									
Building Information	4.1	Building Information	✓	✓	✓	✓	✓				
Commitment to Performance	5.1	Environmental Building Performance	✓								
	5.2	End of Life Waste Performance								✓	
Metering and Monitoring	6.0	Metering	✓	✓	✓	✓	✓				
	6.1	Monitoring Systems	✓	✓	✓	✓	✓				
Responsible Building Practices	7.0	Environmental Management Plan	✓								
	7.1	Formalised Environmental Management System	✓								
Operational Waste	8.0	Operational Waste	✓							✓	
Indoor Air Quality	9.1	Ventilation System Attributes	✓		✓						
	9.2	Provision of Outdoor Air			✓						
	9.3	Exhaust or Elimination of Pollutants	✓		✓						
Acoustic Comfort	10.1	Internal Noise Levels						✓			
	10.2	Reverberation						✓			
	10.3	Acoustic Separation						✓			
Lighting Comfort	11.0	Minimum Lighting Comfort				✓					
	11.1	General Illuminance and Glare Reduction				✓					
	11.2	Surface Illuminance	✓			✓					
	11.3	Localised Lighting Control	✓			✓					
Visual Comfort	12.0	Glare Reduction	✓								
	12.1	Daylight	✓								✓
	12.2	Views	✓								✓
Indoor Pollutants	13.1	Paints, Adhesives, Sealants and Carpets	✓	✓	✓	✓	✓		✓		
	13.2	Engineered Wood Products	✓								
Thermal Comfort	14.1	Thermal Comfort	✓		✓						✓
	14.2	Advanced Thermal Comfort	✓		✓						✓

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

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			Designer	Builder	Mechanical	Electrical	Hydraulic	Acoustic	Structural	Waste	ESD
Greenhouse Gas Emissions	15A.1	Building Envelope	✓								✓
	15A.2	Glazing	✓								✓
	15A.3	Lighting	✓								✓
	15A.4	Ventilation and Air-conditioning	✓		✓						
	15A.5	Domestic Hot Water Systems	✓		✓						
	15A.6	Accredited GreenPower	✓			✓					
Peak Elec. Demand Reduction	16A	Prescriptive Pathway - On-site Energy Generation	✓			✓					
Sustainable Transport	17B.1	Access by Public Transport									✓
	17B.2	Reduced Car Parking Provision	✓	✓							
	17B.3	Low Emission Vehicle Infrastructure	✓	✓							
	17B.4	Active Transport Facilities	✓	✓							
	17B.5	Walkable Neighbourhoods									✓
Potable Water	18B.1	Sanitary Fixture Efficiency	✓	✓			✓				
	18B.2	Rainwater Reuse	✓				✓				
	18B.3	Heat Rejection	✓			✓	✓				
	18B.4	Landscape Irrigation	✓				✓				
	18B.5	Fire System Test Water	✓		✓		✓				
Life Cycle Impacts	19B.1	Concrete	✓	✓					✓		
	19B.2	Steel	✓	✓					✓		
	19B.3	Building Reuse									✓
	19B.4	Structural Timber	✓						✓		
Responsible Building Materials	20.1	Structural and Reinforcing Steel	✓						✓		
	20.2	Timber Products	✓								
	20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	✓	✓	✓	✓	✓	✓	✓		
Sustainable Products	21.1	Product Transparency and Sustainability	✓	✓	✓	✓	✓	✓	✓		✓
Construction & Demolition Waste	22A	Fixed Benchmark	✓							✓	
Ecological Value	23.0	Endangered, Threatened or Vulnerable Species									✓
	23.1	Ecological Value									✓
Sustainable Sites	24.0	Conditional Requirement									✓
	24.1	Reuse of Land									✓
	24.2	Contamination and Hazardous Materials									✓
Heat Island Effect	25.0	Heat Island Effect Reduction	✓								
Stormwater	26.1	Stormwater Peak Discharge	✓				✓				
	26.2	Stormwater Pollution Targets	✓				✓				
Light Pollution	27.0	Light Pollution to Neighbouring Bodies	✓			✓					
	27.1	Light Pollution to Night Sky	✓			✓					
Microbial Control	28.0	Legionella Impacts from Cooling Systems	✓		✓						
Refrigerant Impacts	29.0	Refrigerants Impacts	✓		✓						
Innovation	30A	Innovative Technology or Process									✓
	30B	Market Transformation									✓
	30C	Improving on Green Star Benchmarks									✓
	30D	Innovation Challenge									✓
	30E	Global Sustainability									✓

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Appendix G: Green Star Requirements Summary

Please note the following is a summary only. To fully comply, consultants will need to be engaged to verify items below. In addition, reports and recommendations will need to be incorporated in the full set of drawings prior to construction.

		Credit Details
1.0	Accredited Professional	Green Star Accredited Professional (GSAP) has been contractually engaged as part of the project team to provide advice and support to ensure that the project team has access to information covering Green Star principles, structure, timing and process including: • Eligibility; • Environmental Categories; • Point allocation and scores; • Documentation and Compliance Requirements; • Technical Questions (previously known as CIRs and TCs); • Certification process; and • Green Star branding and marketing rules.
2.0	Environmental Performance Targets	Preparation of a design intent report or an owner's project requirements document. This document must be prepared by the design team at the design phase stage and outline at least the following items: • Description of the basic functions, operations, and maintenance of the nominated building systems including: o A description of its intended operation and maintenance requirements; and o A list of what the main components are (including controls), their operation and the importance of their efficient use. • The targets for the project energy and water consumption and energy and water budgets for all nominated building systems. • Description of how energy, water, and aspects of indoor environment quality are metered and monitored. This includes a meter diagram that illustrates how energy and water budgets are confirmed in operation.
2.1	Services and Maintainability Review	The services and maintainability review is to facilitate input from the design team, the facilities manager and operations staff (if known), and any relevant suppliers and subcontractors (if engaged). The review must address the following aspects for all nominated building systems: • Commissionability; • Controllability; • Maintainability; • Operability, including 'Fitness for Purpose'; and • Safety. The services and maintainability review and its outcomes must be summarised in a 'Service and Maintainability Report'. This report must be agreed and signed off by the involved parties. Action items resulting from this review shall be incorporated in the design intent report or OPR as outlined in 2.0.

Address:
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2.2	Building Commissioning	Commissioning Specification The contractual tender or construction documentation must list the commissioning requirements for each system. It is not sufficient to state that systems must be commissioned to the relevant standard. Instead, the documentation must: • List the design parameters for each system; • List the required commissioning activities; • Define how each system is intended to operate; and • List the acceptable tolerances during commissioning. Contractual documentation must clearly indicate divisions of responsibilities, pre-commissioning procedures, commissioning requirements, witnessing requirements, phased completion requirements (if needed), post occupancy checks, and any training requirements for the operator. Commissioning Plan A commissioning plan shall be developed and include at least the following, the: • Objectives, or basis, of the design; • Scope of the commissioning plan; • Commissioning team list, the individual responsibilities and interface matrix; • General sequence of commissioning; • Proposed commissioning procedures; • Witnessing requirements; • Commissioning program; and • Requirements for subcontractor commissioning manuals. For a project to claim this criterion, the commissioning must have taken place in accordance with the requirements laid out in the contractual documentation and the commissioning plan. The commissioning report must certify that this is the case, and be signed by the designer, the head or main contractor, the commissioning manager (or ICA), and the project manager (or owner's representative). Air Permeability Performance Testing An air permeability test must be carried out by a suitably qualified practitioner, in accordance with AS/NZS ISO 9972:2015 Thermal performance of buildings - Determination of air permeability of buildings - Fan pressurization method., over a minimum area of the building (2000m² or 10% - whichever is greater).

Address:
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2.3	Building Systems Tuning	Following practical completion and prior to occupation, the owner/client has formally committed to a tuning process for all nominated building systems. At a minimum, the commitment must include quarterly adjustments and measurement for the first 12 months after occupation and a review of building system manufacturer warranties. The scope of the tuning works will determine the relevant tuning period. The building tuning process will require the analysis of data from the monitoring systems and assessment of feedback from occupants on building conditions. During the tuning period, the owner/client must commit to take steps to adjust nominated building systems to account for all identified deficiencies. The commitment must include at least the following: • Operating and Maintenance Manuals have been developed in accordance with approved standards and guidelines (refer to Guidance); • A building tuning manual, or a building tuning plan, has been developed in accordance with the approved standards and guidelines; • A building tuning team has been created including the facilities manager, the owner's representative and the ICA (if applicable). The head contractor and the services design professionals are available to address specific tuning issues where required; and • The owner has engaged parties to tune the nominated systems. This engagement includes requirements for: o Verification that nominated systems are performing to their design potential at full and part load conditions; o Reviews of environmental performance against the environmental targets; o Collection of user feedback to match the system performance with the occupant's needs; o Adjustment of all the systems to account for all deficiencies discovered; and o Management, communication, and assignment of responsibilities for the tuning process within the team.
2.4	Independent Commissioning Agent	At least one of the credit requirements for 2.1, 2.2 or 2.3 has been achieved and an Independent Commissioning Agent (ICA) has been appointed to advise, monitor, and verify the commissioning and tuning of the nominated building systems throughout the design, tender, construction, commissioning and tuning phases.

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Postal:
PO Box 4160 Mandurah North WA 6210

3.1	Implementation of a Climate Adaptation Plan	Create a Climate Adaptation Plan which must contain as a minimum the following information: • Summary of the project's characteristics (site, location, climatic characteristics); • Assessment of climate change scenarios and impacts on the project using at least two time scales (e.g. 2030, 2040, 2050 or 2070), relevant to the projects anticipated lifespan. This must include a summary of potential direct and indirect climate change impacts (environmental, social and economic) on the project; • Identification of the potential risks (likelihood and consequence) for the project and the potential risks to people. This risk assessment is to be based on a recognised standard (see 3.0.4); • A list of actions and responsibilities for all 'high' and 'extreme' risks identified; and • Details of stakeholder consultation that was undertaken during plan preparation and how the issues raised have been incorporated; • At least two risk items identified in the risk assessment component of the Climate Adaptation Plan are addressed by specific design responses; and • All risk items identified as 'high' or 'extreme' are addressed by specific design responses.
4.1	Building Information	The project team must confirm that operations and maintenance information is provided for all nominated building systems and define the requirements and procedures for the effective operation, maintenance and recommissioning of the building. A comprehensive set of operations and maintenance information includes details of the building's construction, commissioning information, maintenance instructions for the operations and maintenance team, and guarantees and warranties. Manuals should include: • A summary sheet of relevant building service contacts; • System-level information for nominated building systems; • Introduction and scope, including physical and functional descriptions; • Operating parameters and procedures; • Preventive maintenance requirements, including procedures and schedules; • Corrective maintenance requirements, including repair requirements; • Service contacts, and any warranties and certificates; • Up-to-date drawings incorporating at least: o Mechanical, electrical and hydraulic drawings and schematics covering all associated nominated building systems; o Architectural, façade/building envelope drawings; and o Architectural layout of the base building. In addition: • Details on targets or operational benchmarks for energy use, greenhouse gas emissions, potable water, and indoor environment quality including air quality and thermal comfort indices. These should be SMART (specific, measureable, achievable, relevant and timebound) goals aimed at assisting the facilities management team to optimize performance of the building; • Details on the metering and sub-metering strategy employed by the building, including any instructions for data collection and analysis; and • Description and location of a sustainable procurement framework (if available).

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

		Triggers for updating operations and maintenance information should also be detailed and should include at least when the following events occur: • Refurbishment of a base building space; • Recommissioning, retro commissioning, or replacement of nominated building systems; • Building owner targets or benchmarks change; • A new operational process is introduced or an existing one is changed; or • A new tenant fitout is finalised (if applicable). The above will lead to the development of a Building Log book and Building User information to be provided.
5.1	Environmental Building Performance	Building environmental performance targets must be set, measured, and reported for at least two of the following environmental performance metrics: • Greenhouse gas emissions; • Potable water usage; • Operational waste; and • Indoor environment quality.
5.2	End of Life Waste Performance	At least 80% of the project's GFA, excluding carparking areas, has a formal commitment in place to reduce demolition waste at the end of life of an interior fitout or base building component. Compliance must be demonstrated by providing a commitment to either: A. Establish contractual agreements, in accordance with 5.2A; or B. Achieve a certified operational performance rating for the building, addressing waste from refurbishments, in accordance with 5.2B
6.0	Metering	Metering shall be provided to allow for monitoring of the relevant areas or functions of the project. In most cases floor-by-floor metering will suffice if the entire floor has a single use. If a floor has multiple uses, the different uses shall be metered. Where the building's Gross Floor Area (excluding carparking areas) is smaller than 1000 m2, unless specialist equipment is present in the building, a single meter for energy and a single meter for water will comply with this minimum requirement.
6.1	Monitoring Systems	A monitoring system is provided capable of capturing and processing the data produced by the installed energy and water meters. The monitoring system must accurately and clearly present the metered data and include reports on consumption trends and provide automatic monitoring systems that record both consumption and demand of energy or water, and are capable of producing reports on hourly, daily, monthly, and annual energy use for all meters. The monitoring strategy must include a metering schedule. This schedule shall address the estimated loads for energy and water and must list: • The incoming input (electricity, gas, water, etc.) • The end use (lighting, HVAC, fans); • The estimated energy consumption for the end use; • Which meter(s) provide the required information; and • The individual estimated end consumption.

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
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		The automatic monitoring system must be capable of: • Collecting data from all meters; • Alerting to missing data due to failures; • Recording energy use and water consumption, and providing a reporting capability at user adjustable intervals; • Raising an alarm when the energy or water use increase beyond certain parameters and automatically and instantly issue an alert the facilities manager. The process to assess, correct and validate alerts or faults must be detailed and contained in an accessible location; • Providing a breakdown of the information by building system (mechanical, electrical, etc.), or by space (or by tenanted floor); • Including the consumption water or energy, the load versus time (load profile), and the power factor (in the case of energy); and • Producing, as a minimum, a quarterly report that is automatically emailed to the facilities manager responsible for the building. For small buildings(Less than 1000m²), this criterion can be met by providing a simple automated metering system that provides an alert to the building manager or owner. Alternatively, offsite monitoring is also acceptable through a central reporting system.
7.0	Environmental Management Plan	A project-specific best practice EMP is developed and implemented, to assist the Principal/Head Contractor and its service providers to manage environmental performance, conditions and impacts arising from demolition, excavation and construction. The EMP must cover environmental impacts arising from construction works, and it must be site-specific.
7.1	Formalised Environmental Management System	A formalised systematic and methodical approach to planning, implementing and auditing is in place during construction, to ensure compliance with the EMP. a formalised systematic and methodical approach to planning, implementing and auditing is in place during construction, to ensure compliance with the EMP.
7.2	High Quality Staff Support	Programs and policies in place must go beyond legal requirements for occupational health and safety (OHS) and extend into wellbeing promotion. The responsible party must implement policies and programs to promote health and wellbeing on-site. The programs must target both physical and mental health outcomes. At least three distinct issues, with one of those specifically addressing mental health impacts, must be addressed. Issues that may be considered include: • healthier eating and active living • reduced harmful alcohol and drug and tobacco-free living • increase social cohesion, community, and cultural participation • understanding depression • preventing violence and injury • suicide prevention • decrease psychological distress Training provided to site workers on project specific sustainable practices and initiatives.

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

8.0	Operational Waste	Collections bins to be provided for the following uses: • General Waste • Recycling • At least one other recycling stream (EG metal, batteries etc.) A dedicated area for the storage and collection of the applicable waste streams shall be provided. Along with calculations to demonstrate sufficient size
9.1	Ventilation System Attributes	The building ventilation systems must be designed to comply with ASHRAE Standard 62.1:2013 in regards to minimum separation distances between pollution sources and outdoor air intakes. Windows, doors, openings, vents, grilles, and skylights are all considered outdoor air intakes for purposes of this credit and must be modelled taking into account their free area. Compliance is to be demonstrated in accordance with the distances specified in Table 5.5.1 of the Standard, however projects must also ensure compliance with any other requirement or guidance nominated within the Standard. Analytical solutions are also acceptable by following the example provided within Appendix G of ASHRAE Standard 62.1.9.1.2 Design for Ease of Maintenance and Cleaning Any mechanical ventilation system within the building, whether existing or new, must be designed to provide adequate access for maintenance, to both sides of all moisture and debris-catching components, within the air distribution system. Moisture-producing and debris-catching components include items such as cooling coils, heating coils, humidifiers and filters in the air handling system.9.1.3 Cleaning Prior to Use and Occupation All new and existing ductwork that serves the building must have been cleaned in accordance with the recognised Standards, see the Guidance section. This includes all ductwork in the base building that serves the building from the air handling unit to the supply vents. If no ductwork exists, these requirements are deemed to be met. Where construction management processes (see the 'Responsible Construction Practices' credit) are in place to ensure that all new ductwork, or ductwork that has been recently cleaned, remains free of moisture and debris until occupation, this ductwork can be considered to be clean. All other ductwork (existing and new) including plenums, filters and fan chambers must be cleaned in accordance with a recognised Standard
9.2	Provision of Outdoor Air	One (1) point is awarded where outdoor air is provided at a rate 50% greater than the minimum required by AS 1668.2:2012, or carbon dioxide (CO_2) concentrations are maintained below 800ppm; or Two (2) points are awarded where outdoor air is provided at a rate 100% greater than the minimum required by AS 1668.2:2012, or CO_2 concentrations are maintained below 700ppm.
9.3	Exhaust or Elimination of Pollutants	Pollutants from printing and photocopying equipment, cooking processes and equipment, and vehicle exhaust, are limited from the nominated area by either: • Removing the source of pollutants, such as printing or photocopy equipment, kitchen stoves or vehicles, must be compliant with minimum emissions standards or not be present within the nominated area.; or • Exhausting the pollutants directly to the outside, in accordance with a recognised Standard; and/or physically separated from occupants..

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

10.1	Internal Noise Levels	Demonstrate that internal ambient noise levels in the nominated area are no more than 5dB(A) above the lower figure in the range recommended in Table 1 of AS/NZS2107:2016. The noise measurement and documentation must be provided by a qualified acoustic consultant and in accordance with AS/NZS 2107:2016. In naturally ventilated buildings, all measurements must be carried out with natural ventilation openings in the open position. The internal ambient noise levels must be no more than 10dB(A) above the lower figure in the range recommended in Table 1 of AS/NZS 2107:2016.
10.2	Reverberation	Reverberation time in the nominated area is below the maximum stated in the 'Recommended Reverberation Time' provided in Table 1 of AS/NZ 2107:2016. Reverberation refers to the persistent prolonged reflections of sound in a space. A technical definition is provided in AS/NZS 2107:2016.
10.3	Acoustic Separation	The project addresses noise transmission in enclosed spaces within the nominated area. Enclosed space is defined as meeting rooms, private offices, classrooms, residential apartments (bounding apartment construction), and any other similar space where it is expected that noise should not carry over from one space to the next. For this specific criterion, where the delivery method of the project is core and shell, then the criteria may be considered 'Not Applicable'. Verified by sound consultant.
11.0	Minimum Lighting Comfort	Lights in the nominated area are flicker-free and accurately address the perception of colour in the space.
11.1	General Illuminance and Glare Reduction	95% of the nominated area, lighting levels comply with best practice guidelines and glare is eliminated in accordance with Table 11.1.1: Standards for Best Practice General Illuminance, which references AS1680.
11.2	Surface Illuminance	A combination of lighting and surfaces improve uniformity of lighting to give visual interest in the nominated area. 95% of the spaces in the nominated area must have: • An surface reflectance for ceilings of at least 0.75; and • A direct/indirect lighting system present such that the ceiling area has an average surface illuminance of at least 30% of the lighting levels on the working plane. The surface reflectance value of 0.75 corresponds to a matte flat white ceiling. The surface reflectance value for the final finish must be obtained from the manufacturer's data sheet. Alternatively, lighting can be modeled in accordance with 11.2B

Address:
71 Allnutt Street Mandurah WA 6210
Postal:
PO Box 4160 Mandurah North WA 6210

11.3	Localised Lighting Control	95% of the nominated area, occupants have the ability to control the lighting in their immediate environment. This includes turning the lights on and off and adjusting their light levels. In residential spaces, this requirement can be achieved through the provision of sufficient power outlets for future task lights / lamps around the predicted furniture layouts used in the space. In addition, appropriate task lighting must be provided for kitchens, bathrooms, and service areas.
12.0	Glare Reduction	Glare from sunlight through all viewing façades and skylights in the nominated area is reduced through a combination of blinds, screens, fixed devices, or other means.
12.1	Daylight	A percentage of the nominated area receives high levels of daylight: • For 40% of the nominated area – 1 point; • For 60% of the nominated area – 2 points. Workspace layout required to complete the calculations
12.2	Views	At least 60% of the nominated area has a clear line of sight to a high quality internal or external view.
13.1	Paints, Adhesives, Sealants and Carpets	At least 95% of all internally applied paints, adhesives, sealants and carpets meet stipulated 'Total VOC Limits' as shown in Table 13.1.1, or, where no paints, adhesives, sealants or carpets are used in the building. Verified using: • Product certification in accordance with 13.1.1A; or • Laboratory testing in accordance with 13.1.1B.
13.2	Engineered Wood Products	Either no new engineered wood products are used in the building, or at least 95% (by area) of all engineered wood products meet the formaldehyde emission limits specified in Table 13.2. There are two methods for demonstrating than an engineered wood product complies: • Product certification in accordance with 13.2A; or • Laboratory testing in accordance with 13.2B.
14.1	Thermal Comfort	A high degree of thermal comfort is provided to occupants in the space, equivalent to 80% of all occupants being satisfied in the space. HVAC system requirements: • Dry bulb temperature must be between 20°C and 24°C. • Relative humidity must be controlled between 40% and 60%. • Air velocity must be no more than 0.2m/s with no supply air directed at occupants (unless they have direct control over air flow and/or direction) • Systems must have modulation/turn down capability (i.e. the demonstrated ability to maintain both dry bulb temperature and relative humidity at low space loads). • The system must have distinct internal zones (no more than 120 m2) and external perimeter zones (no more than 75m2) with independent temperature controls. Perimeter zones must have a maximum depth of 4m and cannot serve more than one orientation. Small deviations are allowed for zone sizes at the discretion of the mechanical engineer. Façade Glazing Requirements: • SHGC max of 0.3 • U value max of 3.0 This can also be modelled to ensure compliance. (Residential average rating 7 stars)

Address:
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14.2	Advanced Thermal Comfort	A high degree of thermal comfort is provided to occupants in the space, equivalent to 90% of all occupants being satisfied in the space. • Naturally ventilated spaces – The internal temperatures in each space are within 90% of Acceptability Limit 1 of ASHRAE Standard 55-2013, in accordance with 14.1.1; • Mechanically ventilated spaces – The Predicted Mean Vote (PMV) levels are between -0.5 and +0.5, inclusive, in accordance with 14.1.2B; or • Residential spaces – An average NatHERS rating of 8 Stars or greater is achieved, in accordance with 14.1.3
15A.1	Building Envelope	The roof and ceiling, walls, and flooring construction achieves a 15% increase on the minimum required R-values specified in J1.3, J1.5 and J1.6. Please see associated Section J report by Sustainability WA.
15A.2	Glazing	For vertical glazing, the total energy used for each orientation and each storey is not greater than 85% of the total allowance according to the Australian Building Codes Board glazing calculator or the calculated aggregated air-conditioning energy value as defined in part J2.4 of the NCC; and Where there are roof lights, the SHGC and total U-Value of these roof lights exceed the requirements of section J1.4 by 15%.
15A.3	Lighting	• The actual installed aggregate illumination power density is to be 30% less than the maximum illumination power densities defined in Table J6.2a; • Automated lighting control systems, such as occupant detection and daylight adjustment, are provided to 95% of the nominated area; and • For Class 5 and 9a buildings only, the size of individually switched lighting zones does not exceed 100m2 for 95% of the nominated area. Maximum Lighting density allowable: Please see associated Section J report by Sustainability WA
15A.4	Ventilation and Air-conditioning	The HVAC systems comply with the following conditions: • The installed fan motor power and pump power, is at least 15% less that the maximum fan motor power and pump power defined in Tables J5.2 and J5.4a; • The thermal efficiency of the installed water heater is 15% more than the required minimum as defined in Table J5.4b; and • The required minimum energy efficiency ratio for packaged air conditioning equipment and refrigerant chillers is at least 15% higher than that specified in: o NCC Tables J5.4d and J5.4e; or o MEPS, where Section J does not apply to the equipment capacity.
15A.5	Domestic Hot Water Systems	Domestic hot water systems are powered by one of the following heat sources: • Renewable Energy (which may include electric/gas boost); • Natural Gas; • Electric heat pump (minimum COP 3.5 under design conditions); or • Waste heat or heat recovered from another process.

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15A.6	Accredited GreenPower	Projects which have committed to procure GreenPower® and a supply contract is in place to procure at least 50% of the building's electricity consumption through accredited GreenPower® products (2 points). At least five points in this pathway have been achieved, and a supply contract is in place to procure 100% of the building's electricity consumption through accredited GreenPower® products(5 points). The length of time of the commitment is for a minimum period of ten years after Practical Completion
16A	Prescriptive Pathway - On-site Energy Generation	Use of on-site renewable energy or on-site generation sources reduces the peak electricity demand by at least 15%. Peak electricity demand is the predicted annual peak calculated as the sum of all distribution boards (to include all miscellaneous loads) relevant to the building as shown in the as-installed electrical schematics. Peak electricity demand must be calculated in line with the below requirements: • In accordance with AS/NZS 3000:2007 (or as subsequently amended); • As the absolute design capacity of the system, after the application of diversity factors, but • prior to the application of contingency factors as required for utility agreements (the value is likely to be about 30% less than that for the utility agreement); and • To include all building end-use loads, except process loads, in the peak demand assessment.
17B.1	Access by Public Transport	Based on the accessibility of the site by public transport. Calculator used to determine compliance.
17B.2	Reduced Car Parking Provision	When there is a reduction of car parking spaces for the proposed building, when compared to the maximum local planning allowance. The points awarded are based on the level of the reduction and the site's access to public transport.
17B.3	Low Emission Vehicle Infrastructure	Parking spaces and/or dedicated infrastructure is provided to support the uptake of low-emission vehicles. To qualify for this point, the low-emission vehicle infrastructure must meet one of the following benchmarks: • 15% of parking is dedicated to fuel-efficient vehicles and clearly designated, with a maximum of 5% for motorcycle parking; • 5% of parking is dedicated to electric vehicles and charging infrastructure is provided for each space; or • For residential projects (at least 80% GFA Class 1a or 2), dedicated car share spaces and vehicles are provided at the rate of 1 per 70 project occupants. Nominated solution for project: 1 Motorcycle space plus 2 Parking spaces to be nominated as fuel efficient vehicle parking spaces
17B.4	Active Transport Facilities	Bicycle parking and associated facilities are provided to a proportion of the building's regular occupants and visitors. Class 3-9: 7.5% of total regular occupants.

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17B.5	Walkable Neighbourhoods	The project is located so that at least four (4) amenities for industrial buildings, or at least eight (8) amenities for all other types of buildings, are within 400m of the project. The distanceis to be measured from the centre of the project's site; or The project achieves a Walk Score of at least 70 for industrial buildings, or at least 80 for all other types of buildings.
18B.1	Sanitary Fixture Efficiency	All fixtures are within one star of the following WELS rating: Taps: 6 Star Urinals: 6 Star Toilet: 5 Star Showers: 3 Star (> 4.5 but <= 6.0) Clothes Washing Machines: 5 Star Dishwashers: 6 Star
18B.2	Rainwater Reuse	A rainwater tank is installed to collect and reuse rainwater, within the project's site boundary as deemed appropriate by the project team.
18B.3	Heat Rejection	No water is used for heat rejection. To comply, the project must be either naturally ventilated (allowing for the use of ceiling fans or similar) or the HVAC system must not use water for heat rejection.
18B.4	Landscape Irrigation	Either drip irrigation with moisture sensor override is installed, or where no potable water is used for irrigation. The landscaping and associated systems must be designed to reduce the consumption of potable water required for irrigation through the installation of subsoil drip irrigation and moisture sensor controls.
18B.5	Fire System Test Water	Where a water sprinkler system is required under Part E of the NCC, • The fire protection system does not expel water for testing; or • The fire protection system includes temporary storage for 80% of the routine fire protection system test water and maintenance drain-downs for reuse on-site calculated on the basis that any single zone is drained down annually. • If sprinkler systems are installed, each floor must be fitted with isolation valves or shut-off points for floor-by-floor testing.
19A.1	LCA	A whole building life cycle assessment (LCA) is conducted for the project building and a reference building. Project teams shall demonstrate the reduction of environmental impacts when compared to the reference building. Points are awarded based on the extent of environmental impact reduction achieved against seven defined environmental impact categories

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19B.1	Concrete	Portland cement content is reduced by 30%, measured by mass across all concrete used in the project compared to the reference case (1 Point); or Portland cement content is reduced by 40%, measured by mass across all concrete used in the project compared to the reference case(2 Points). The mix water for all concrete used in the project contains at least 50% captured or reclaimed water (measured across all concrete mixes in the project) At least 40% of coarse aggregate in the concrete is crushed slag aggregate or another alternative material (measured by mass across all concrete mixes in the project), provided that use of such materials does not increase the use of Portland cement by over five kilograms per cubic meter of concrete; or At least 25% of fine aggregate (sand) inputs in the concrete are manufactured sand or other alternative materials (measured by mass across all concrete mixes in the project), provided that use of such materials does not increase the use of Portland cement by over five kilograms per cubic meter of concrete.
19B.2	Steel	Demonstrate that there is a reduction in the mass of steel framing used when compared to standard practice. By demonstrating 95% of Category A products and 25% of Category B products meet the strength grades specified in Table 19B.2A.1 and Table 19B.2A.2, as applicable (1 point). Demonstrate a 5% reduction in the mass of reinforcing steel used in the building when compared to standard practice (1 point).
19B.3	Building Reuse	At least 50% (by area) of the building façade is retained (1 Point); or where the proportion retained is 80% (2 Points). At least 30% (by mass) of the existing major structure is retained (1 Point); or where the proportion retained is 60%(2 Points).
19B.4	Structural Timber	The minimum requirement is met where all structural timber used in the building is responsibly sourced. Where the building is constructed from the following proportion of structural timber: • 1 point for 30% of the building's GFA; • 2 points for 70% of the building's GFA; and • 3 points for 90% of the building's GFA.
20.1	Structural and Reinforcing Steel	95% of the building's steel (by mass) is sourced from a Responsible Steel Maker; and • For steel framed buildings, at least 60% of the fabricated structural steelwork is supplied by a steel fabricator/steel contractor accredited to the Environmental Sustainability Charter of the Australian Steel Institute (ASI); or • For concrete framed buildings, at least 60% (by mass) of all reinforcing bar and mesh is produced using energy-reducing processed in its manufacture (measured by average mass by steel maker annually).

Address:
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20.2	Timber Products	At least 95% (by cost) of all timber used in the building and construction works is either: • Certified by a forest certification scheme that meets the GBCA's 'Essential' criteria for forest certification; or • Is from a reused source. Where the cost of timber is less than 0.1% of the Project Contract Value, this criterion is made 'Not Applicable'.
20.3	Permanent Formwork, Pipes, Flooring, Blinds and Cables	90% (by cost) of all permanent formwork, pipes, flooring, blinds and cables in a project either: • Do not contain PVC and have a recognised product declaration; or • Meet the GBCA's Best Practice Guidelines for PVC. Where the cost of PVC products in the project is less than 1% of the Project Contract Value this criterion is made 'Not Applicable'.
21.1	Product Transparency and Sustainability	Demonstrate that a specified percentage of eligible products meet one of the following initiatives: A. Reused Products, that have been previously used and are incorporated in the project without significant changes to the structure or function of the item.; B. Recycled Content Products, items produced with recovered materials; C. Environmental Product Declarations; D. Third-Party Certification; or E. Stewardship Programs.
22A	Construction and Demolition Waste - Fixed Benchmark	At least 90% of the waste generated during construction and demolition has been diverted from landfill. Waste shall be reported in kilograms. To calculate the amount of waste diverted from landfill, the project team is required to report the total amount of waste generated and the total amount of waste diverted from landfill, and report on the proportion diverted as a percentage.
23.0	Endangered, Threatened or Vulnerable Species	Minimum requirement: At the date of site purchase or option contract, no critically endangered, endangered or vulnerable species, or ecological communities were present on the site.
23.1	Ecological Value	Ecological Value Calculator based on a comparison of the condition of the site before and after design/construction.
24.0	Conditional Requirement	Minimum requirement: At the date of site purchase or option contract, the project site did not: • Include old growth forest; • Include prime agricultural land; • Include a wetland of 'High National Importance'; or • Impact on 'Matters of National Significance'.
24.1	Reuse of Land	75% of the site was previously developed land at the date of site purchase or, for previously owned land, at the project's Green Star registration date.

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24.2	Contamination and Hazardous Materials	The site, or an existing building, was previously contaminated and the site has been remediated in accordance with a best practice remediation strategy.
25.0	Heat Island Effect Reduction	At least 75% of the total project site area comprises building or landscaping elements that reduce the impact of the heat island effect. Nominated solution for project: Roofing materials, including shading structures, having the following: For roof pitched <15°– a three year SRI of minimum 64; or For roof pitched >15°– a three year SRI of minimum 34. Grey or white concrete.
26.1	Stormwater Peak Discharge	Demonstrate that the post-development peak event stormwater discharge from the site does not exceed the pre-development peak event stormwater discharge, using the Average Recurrence Interval (ARI)
26.2	Stormwater Pollution Targets	Once above point is achieved, demonstrate that all stormwater discharged from the site meets the required pollution reduction targets when compared to untreated runoff in accordance with the following requirements.
27.0	Light Pollution to Neighbouring Bodies	Minimum Requirement: Demonstrate that all outdoor lighting on the project complies with AS 4282:1997 Control of the obtrusive effects of outdoor lighting.
27.1	Light Pollution to Night Sky	Demonstrate that one of the following specified reductions in light pollution has been achieved by the project. • Control of upward light output ratio (ULOR), so that no external luminaire on the project has a ULOR that exceeds 5%, relative to its actual mounted orientation; or • Control of direct illuminance, that produces a maximum initial point illuminance value no greater than: o 0.5 Lux to the site boundary; and o Lux to 4.5 metres beyond the site into the night sky, when modelled using a calculation plane set at the highest point of the building. Calculations shall be in accordance with AS 4282:1997.
28.0	Legionella Impacts from Cooling Systems	Demonstrate that impacts associated with harmful microbes in building cooling systems are minimised through one of the following: • Naturally ventilated buildings; or • Waterless heat-rejection systems; or • Water-based heat rejection systems that include best practice measures for Legionella Control and Risk Management. Nominated solution for project: Waterless heat-rejection systems

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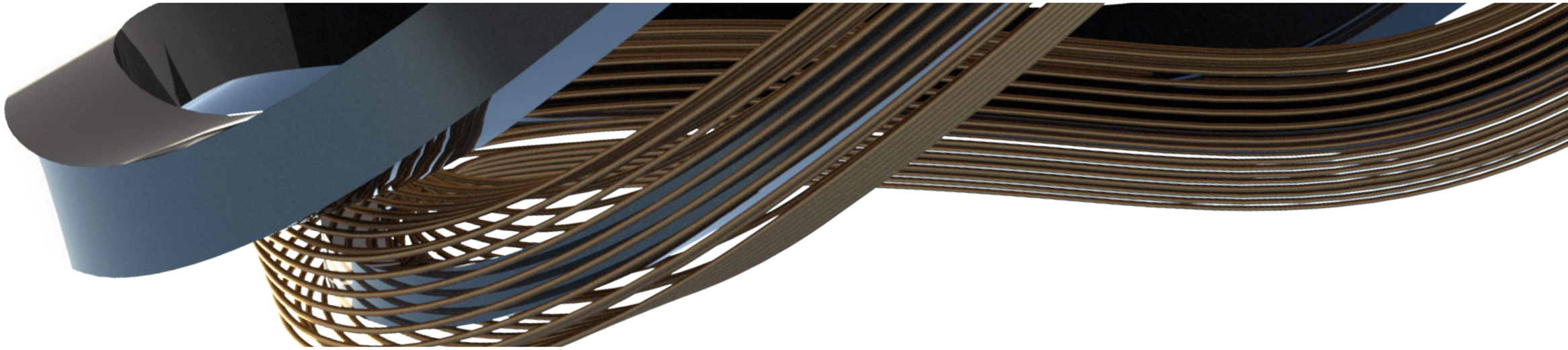
29.0	Refrigerants Impacts	Demonstrate that environmental impacts from refrigerants leaking into the atmosphere are minimised, in accordance with one of the following requirements: • The combined Total System Direct Environmental Impact (TSDEI) of the refrigerant systems serving the project, calculated in accordance with 29.1A, is less than 15; or • The combined TSDEI of the refrigerant systems calculated in accordance with 29.1A is between 15 and 35; AND a leak detection system in accordance with 29.1B is in place; or • All refrigerants in the project have an Ozone Depletion Potential (ODP) of zero and a Global Warming Potential (GWP) of 10 or less; or • There are no refrigerants used in the project.
30A	Innovative Technology or Process	The project meets the aims of an existing credit using a technology or process that is considered innovative in Australia or the world.
30B	Market Transformation	The project has undertaken a sustainability initiative that substantially contributes to the broader market transformation towards sustainable development in Australia or in the world.
30C	Improving on Green Star Benchmarks	The project has achieved full points in a Green Star credit and demonstrates a substantial improvement on the benchmark required to achieve full points. For credits where this Innovation criterion is applicable, improved benchmarks are included in the 'Innovation' section of the credit.
30D	Innovation Challenge	The project can target any of the current Innovation Challenges that are published on the GBCA website. Alternatively, where the project addresses a sustainability issue not included within any of the credits in the existing Green Star rating tools, projects may propose a new Innovation Challenge.
30E	Global Sustainability	Project teams may adopt an approved credit from a Global Green Building Rating tool that addresses a sustainability issue that is currently outside the scope of this Green Star rating tool.

Public Artwork Concept Design



flight over water

Proposal Nov 2018

prepared by Big Spoon Art Services

STUARTGREEN artist
big spoon art services

artworks - Stuart Green

Stuart Green - Lead artist
(Director Big Spoon Art Services)

With over twenty five years' experience creating artworks for the public realm Stuart Green has created an enviable portfolio of artworks in a range of scales and themes. Based in Perth he has completed works in his home town as well as nationally and internationally. Stuart Green and Big Spoon Art Services were recently selected for the internationally competitive Al Zubara artscape project in Qatar.

His portfolio includes architectural facade treatments, monumental stand-alone artworks and smaller scale intimate interpretive pieces.

Stuart Green has a keen interest in the phenomena of the natural world and often these images and ideas generate the forms and visual structures manifest in his artwork. He has a keen interest in pattern and form, and his work often follows three threads; *line*, *object* and *field*.

Ben Price- Designer - Project development
(Studio - Big Spoon Art Services)

Ben and Stuart have collaborated on many projects over the years. Ben is a integral element in the success of the studio, working full time to assisted in the design and delivery of many major projects produced in the studio. Ben has 15 years of experience working across the fields of Architecture, Landscape and Public Artwork and contributes this knowledge to Stuart's Artist practice.

The Studio

Big Spoon Art Services has a large production facility and full time staff able to realise the production and delivery of large and small scale public artworks and integrated services

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Flight over water

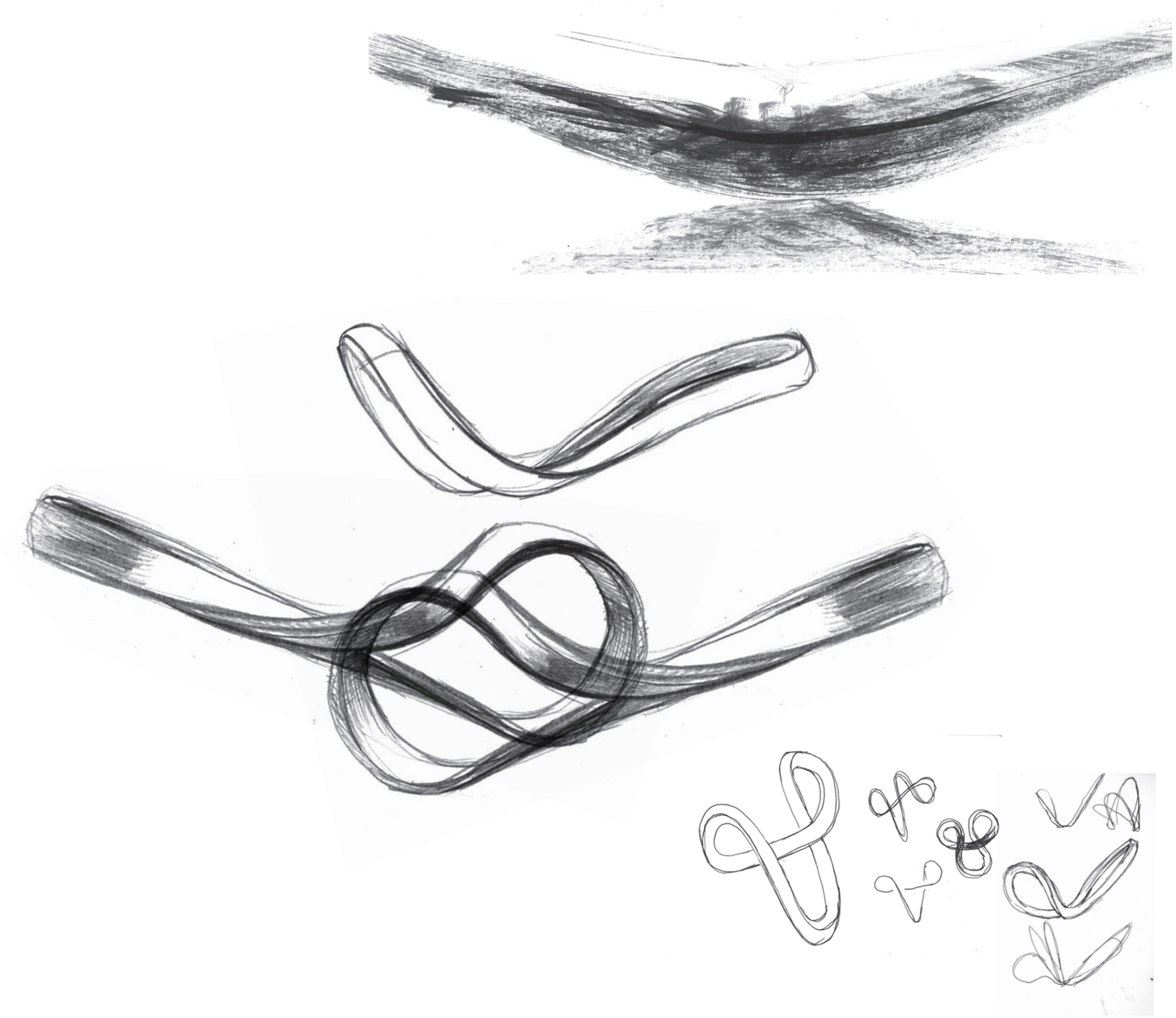
The work proposed here centers on the availability and the centrality of the reflection pond, which acts to calm the visitor and resident alike. The entry pond provides a focus point on entry and a meditative oasis-like center for the development.

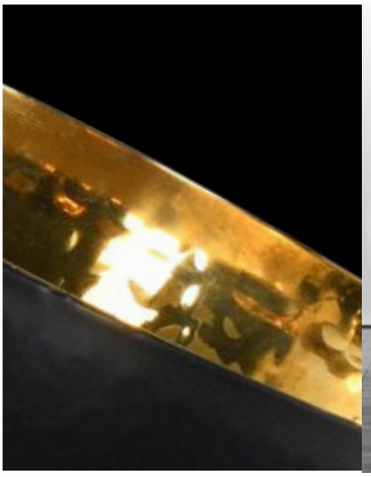
Calm still water has a timeless quality and the proposed sculpture plays with this sense of stillness by both reinforcing and contrasting this with counterbalanced form. The sculpture cantilevers over the pond in an abstract gesture of sinuous flight which alludes to the looping travel of water birds, dropping and rising again in their searches along the river.

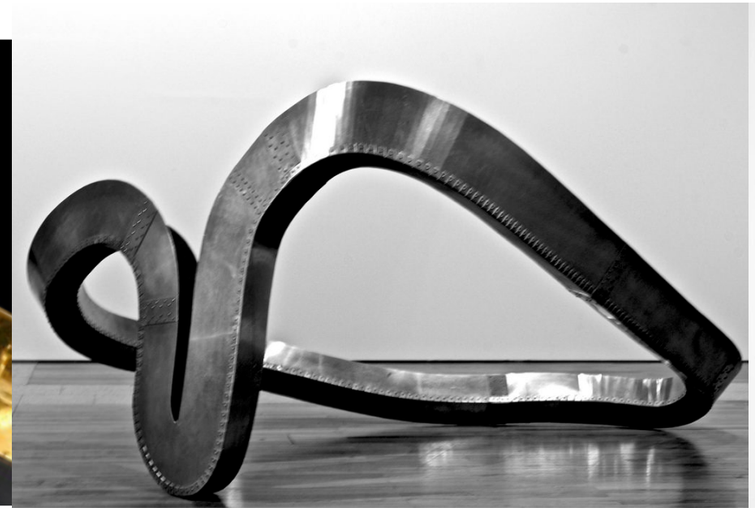
The sculpture itself is a pair of entwined loops that both wrap through each other but also envelop and hold a good deal of airspace. The work becomes a passage for the visual travel through the air, with the eye following the lines of the work as they duck and twist in arabesque flight.

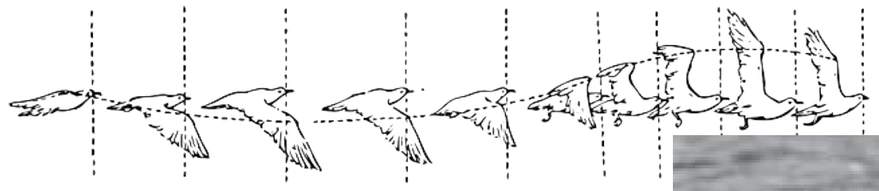
The work is also very much about materials and the quality of the surfaces and their ability to reflect the available light and the water. Each material choice is about the capture, holding and transmission of light to give a rich and lustrous sense of luxury. High gloss black combined with rich gold allows the work to manipulate Light in its full spectrum. The work sits in the cool of the shadows of the development, and is intended to give a layered depth and richness to these darker recesses of the sanctuary-like environment. It is also about the gleaming highlight of gold, flashing against the shadows - like the ripple of light left on the water late in the day, as an unseen bird makes off with one last snatched fish.

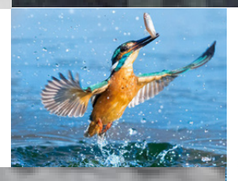
At night the work is further enlivened as up-lights on the pond floor trace out the line of the work, adding additional light animation as the water surface ripples and undulates, in turn bending and moving the projected light with the quality of the water surface.

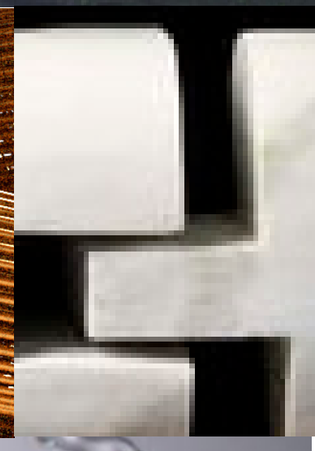


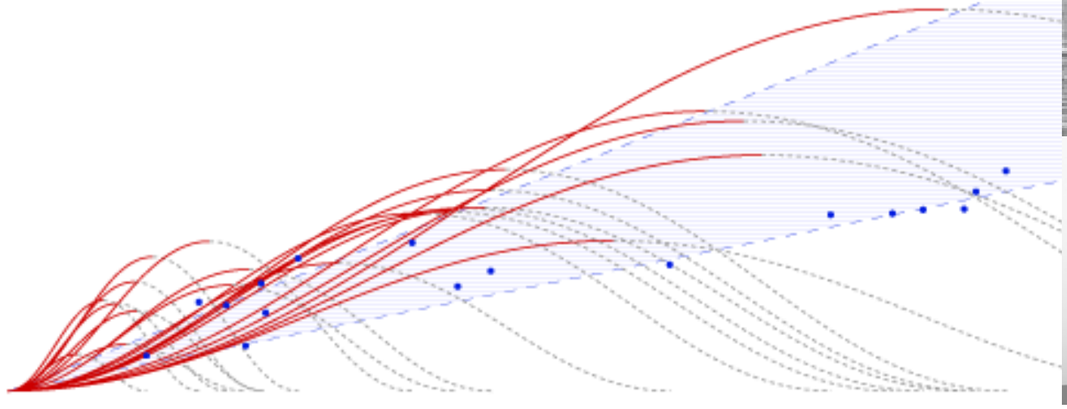


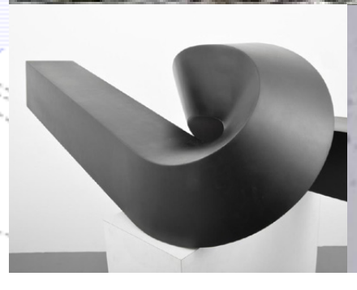


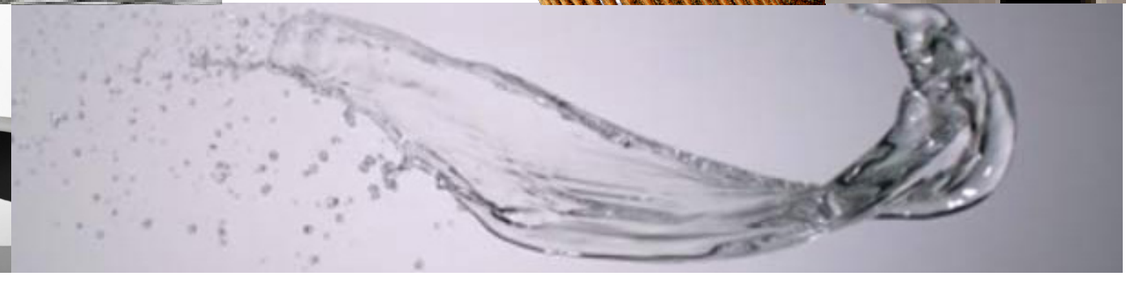


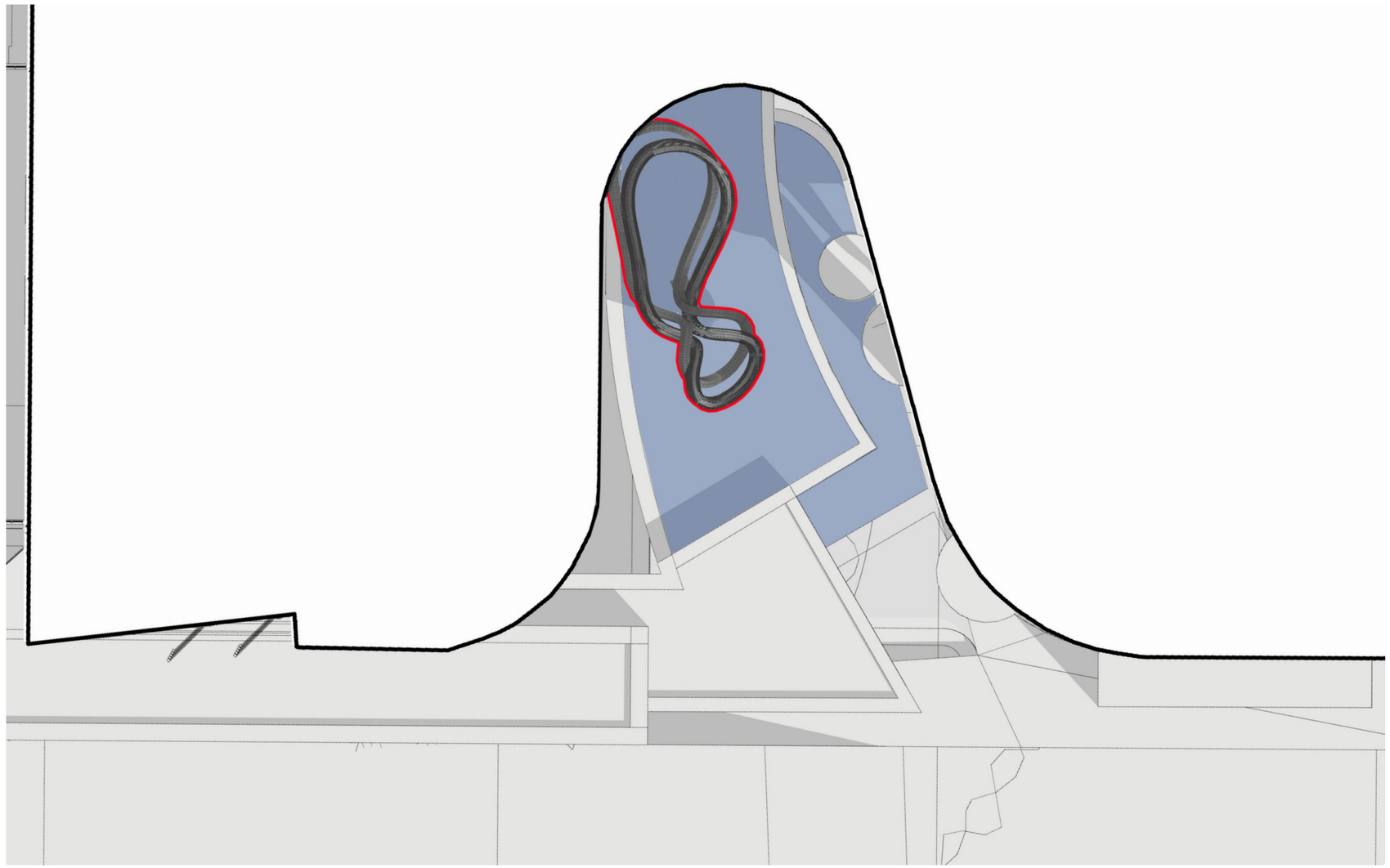




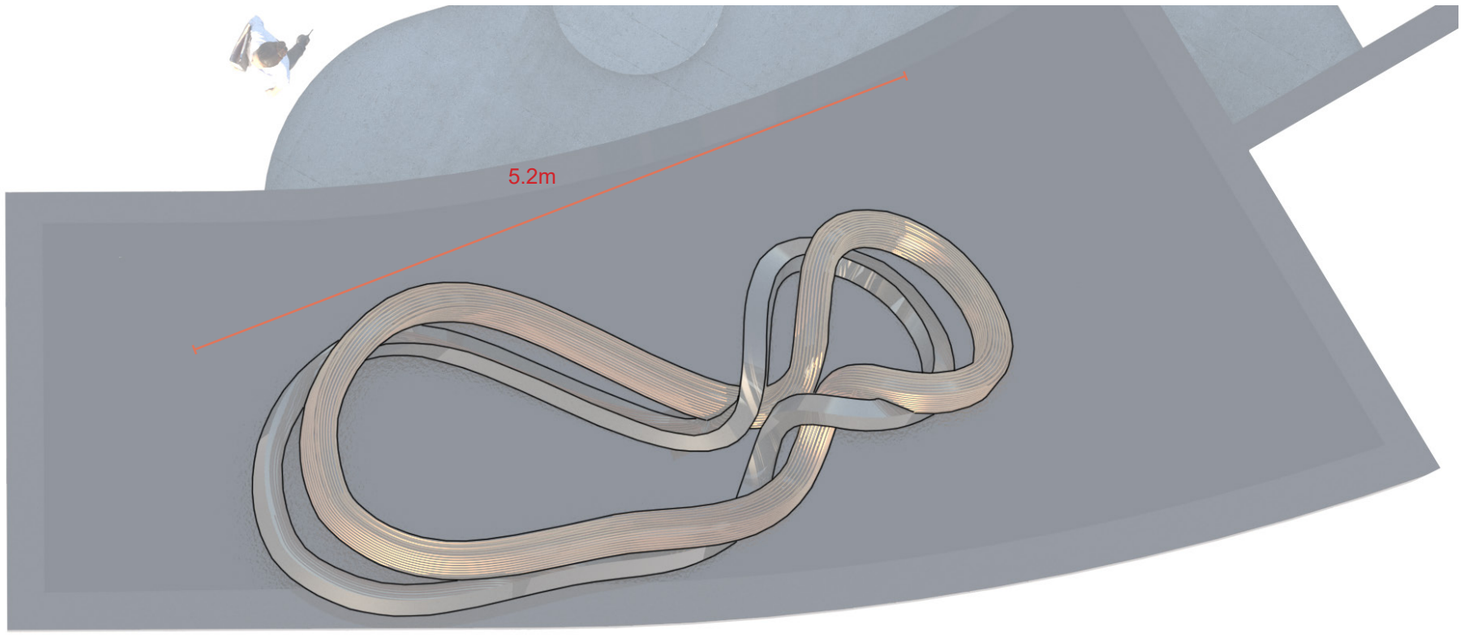


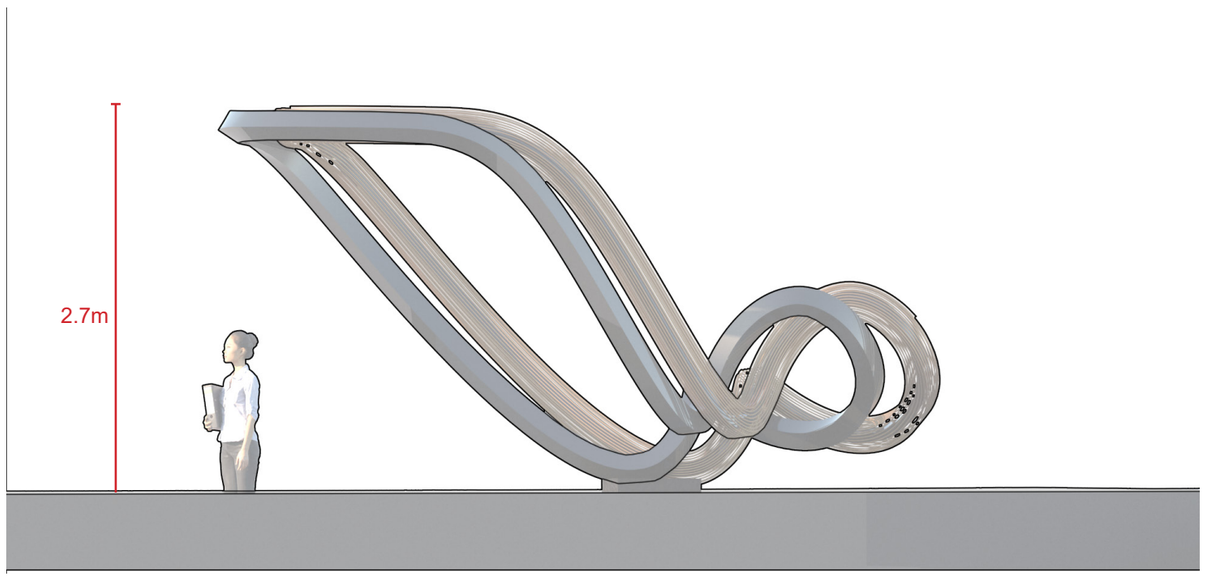


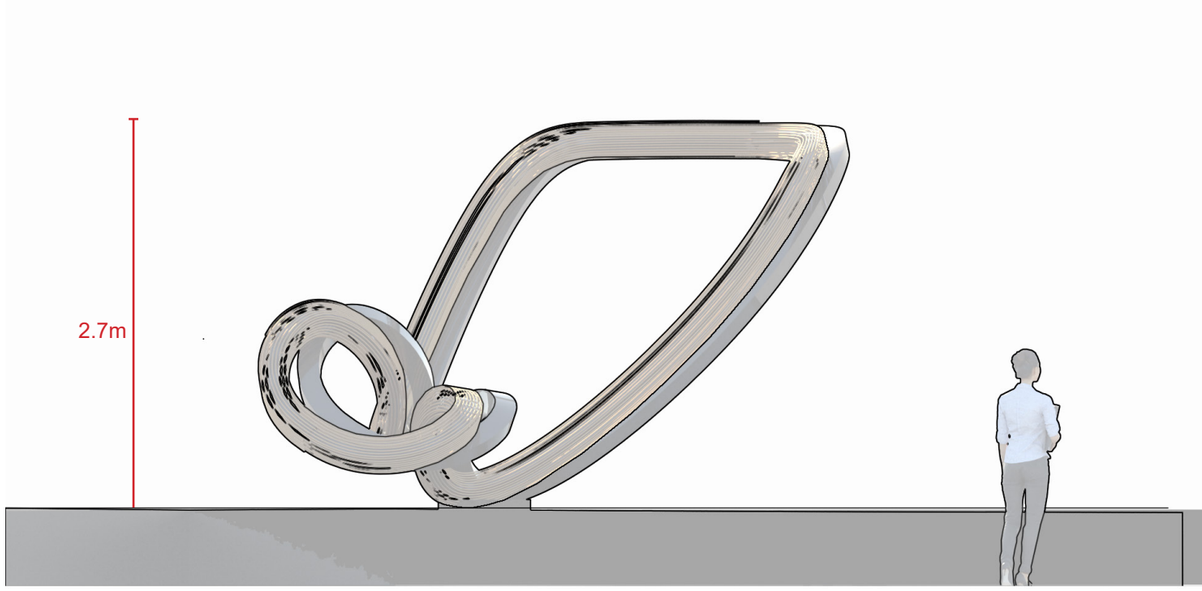




Wren Street







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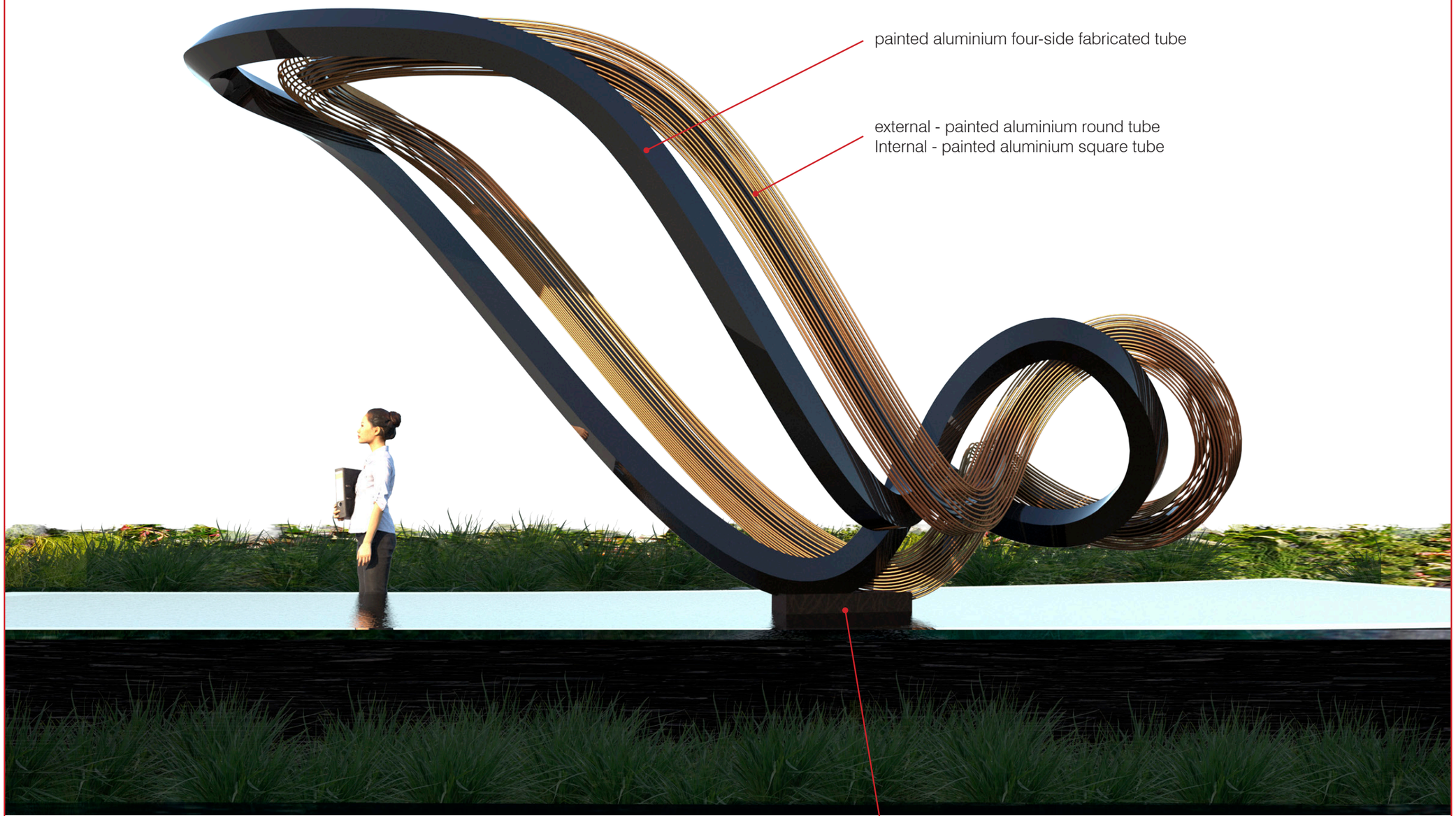
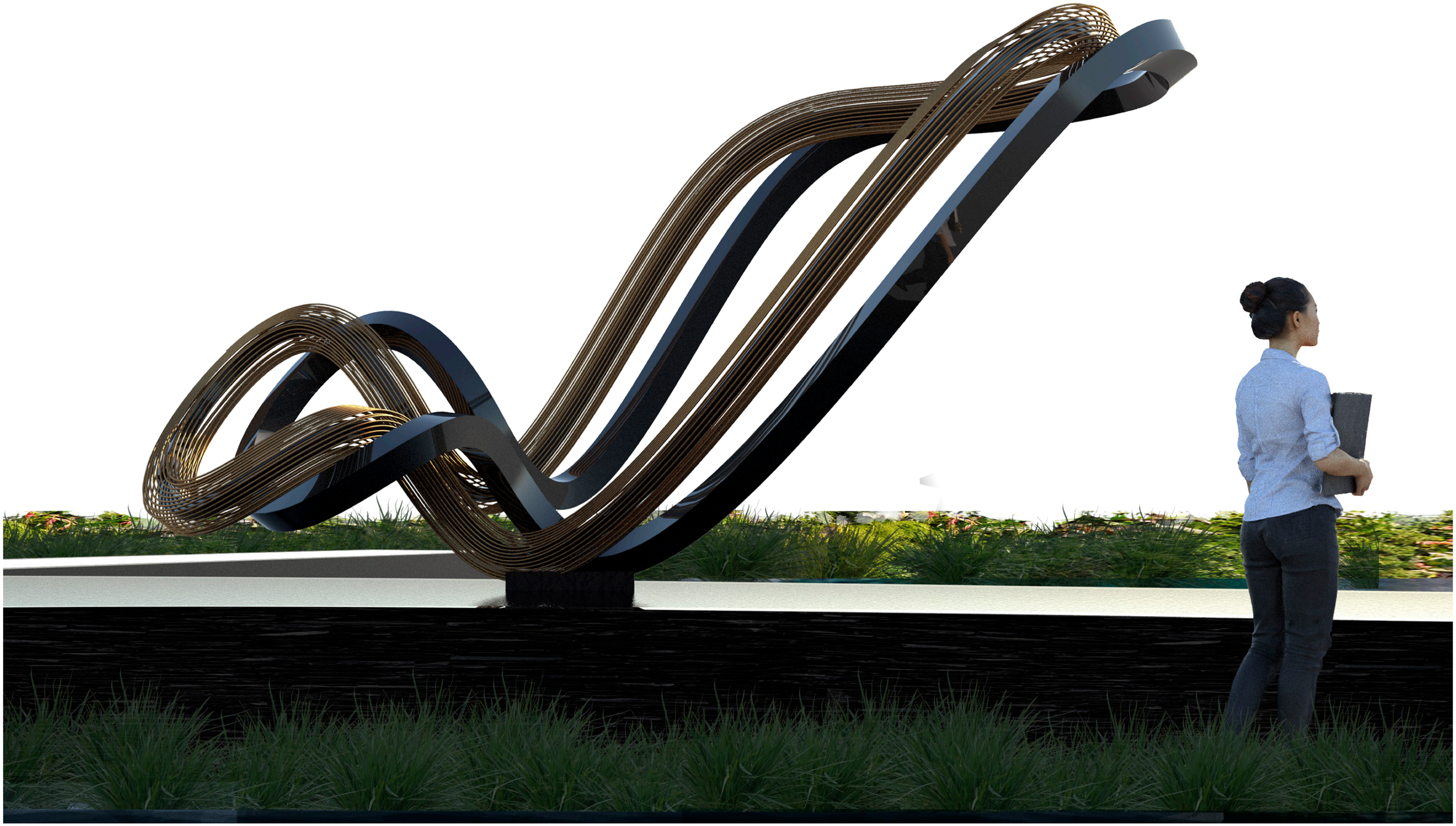
Sanctuary - Wren Street. Public Artwork Concept Proposal





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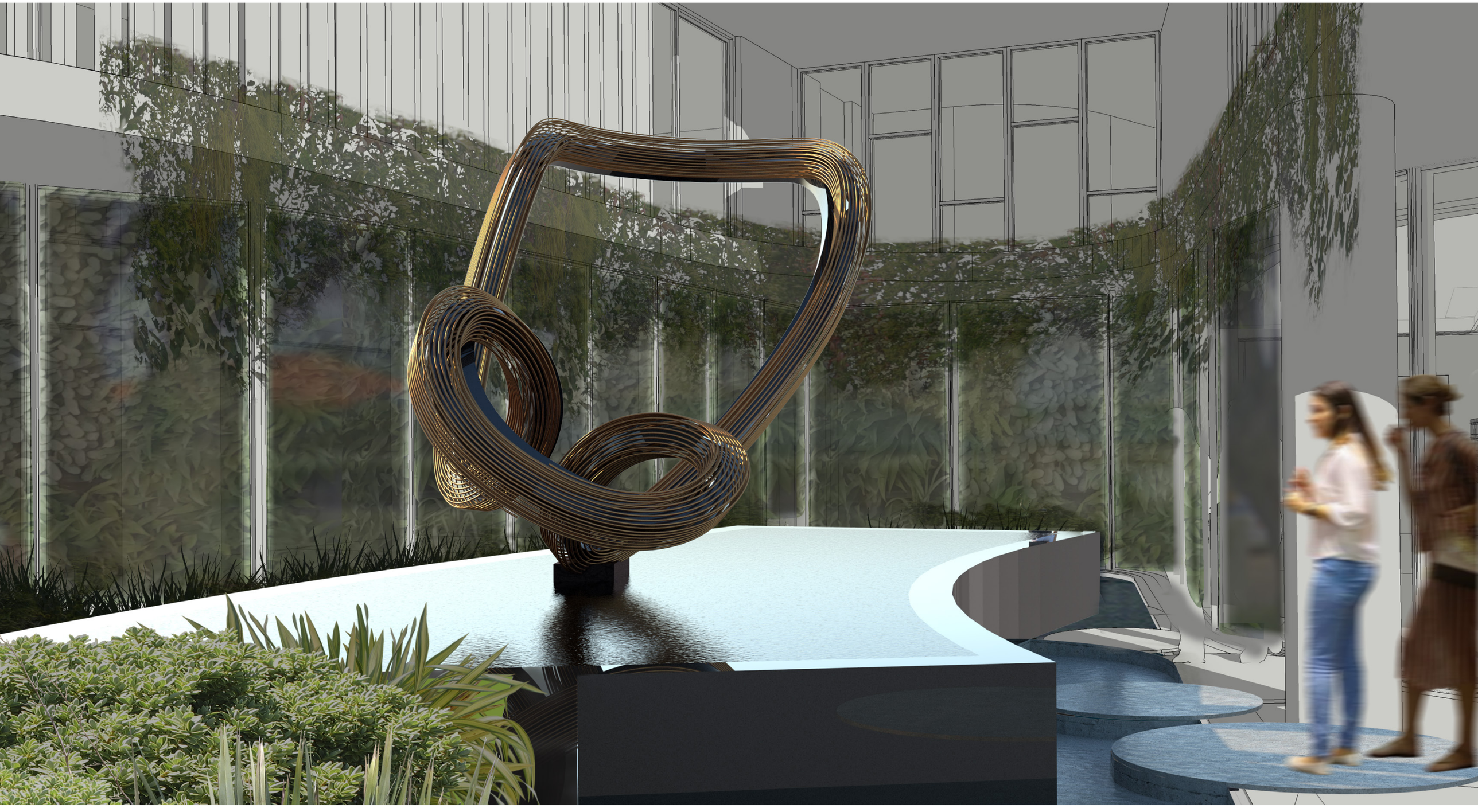

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Commissioning process

Big Spoon Art Services would be engaged using as a base the standard Western Australian Government Percent for Art Commission Agreement.

Big Spoon Art Services with Stuart Green as lead artist would undertake the further stages;

- Design Development
- Design Documentation and Engineering certification
- Fabrication
- Installation as suitable

Insured - Big Spoon Art Services Pty Ltd

ABN: 37 133 129 085

Public Liability	$20,000,000
Product Liablity	$20,000,000
Professional Indemnity	$5,000,000
Goods Transit	$200,000
Workers Compensation	As per legislation

	Progress Stage	Milestones
2 weeks	concept development	• Concept development for presentation to council or relevant bodies for approvals
2 months	design development/ documentation	• 50% design development report to client, including preliminary engineering • 100% design development report to client, including documentation and engineering sign off
9 months	fabrication	• Fabrication update to client at 50% completion, including progress photos. Visit to Artist studio if desired. • Fabrication complete.
1 week on site	installation	
2 weeks from installation	record	• Submission of Maintenance Manual before Building practical completion date. • Submission of project record a maximum of 4 weeks from PC.

All dates to be backdated from Practical completion date of the building/ site works. Concept design can be developed immediately on acceptance of contract.

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	Qty	Each (ex gst)	Total (ex gst)
Concept Design Stage			
Artist Fee	1	$ 3,000.00	$ 3,000.00
		total	$ 3,000.00

	Qty	Each (ex gst)	Total (ex gst)
Design Development Stage			
Artist fee (22%)	1	$ 33,000.00	$ 33,000.00
Desing Dev & Documentaion	1	$ 6,000.00	$ 6,000.00
Engineering	1	$ 3,300.00	$ 3,300.00
		total	$ 42,300.00

Fabrication			
materials	1	$ 10,500.00	$ 10,500.00
fabrication	1	$ 68,500.00	$ 68,500.00
workshop fees and consumables	12	$ 870.00	$ 10,440.00
finsihing, painting	1	$ 6,500.00	$ 6,500.00
fixings	1	$ 560.00	$ 560.00
		total	$ 96,500.00

Lighting - supply only			
LED lighting (in pond uplighighting)	4	$ 650.00	$ 2,600.00
control gear/ LED 24V driver	1	$ 1,200.00	$ 1,200.00
		total	$ 3,800.00

Installation			
transport	2	$ 600.00	$ 1,200.00
crane hire	1	$ 1,200.00	$ 1,200.00
on site install crew	2	$ 1,000.00	$ 2,000.00
		total	$ 4,400.00

TOTAL EX GST	$	150,000.00
GST	$	15,000.00
TOTAL (INCL GST)	**$**	**165,000.00**

Exclusions

any site access or induction fees
pond and associated works construction or supply
pond concrete upstand/plinth and upstand facing for sculpture
all electrical supply and installation (luminaires only supplied by artist)
site fencing and or any traffic management
Council or any other Authority permits

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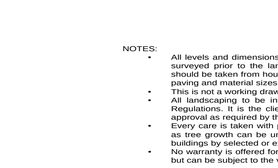
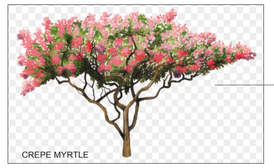
NOTES:

- All levels and dimensions to be checked on site before construction commences. If the property has not been surveyed prior to the landscape design, some dimensions may be inaccurate. All measurements at setout should be taken from house if no survey has been carried out. Some minor adjustments may be required due to paving and material sizes selected.
- This is not a working drawing. Further structural drawings may be required.
- All landscaping to be in accordance with Australian Standards and in compliance with Council and State Regulations. It is the client's responsibility to submit plans (in conjunction with the installing landscaper) for approval as required by the council unless otherwise arranged with CultivArt.
- Every care is taken with plant selection and CultivArt specifies that all trees should be root barriered, however as tree growth can be unpredictable, no warranty is offered for future damage to paving, footings, pools and buildings by selected or existing trees.
- No warranty is offered for the success of specified planting. All plants are selected by a qualified horticulturalist but can be subject to the variables of extreme weather conditions, water deprivation and pests and diseases.



MAGNOLIA LITTLE GEM



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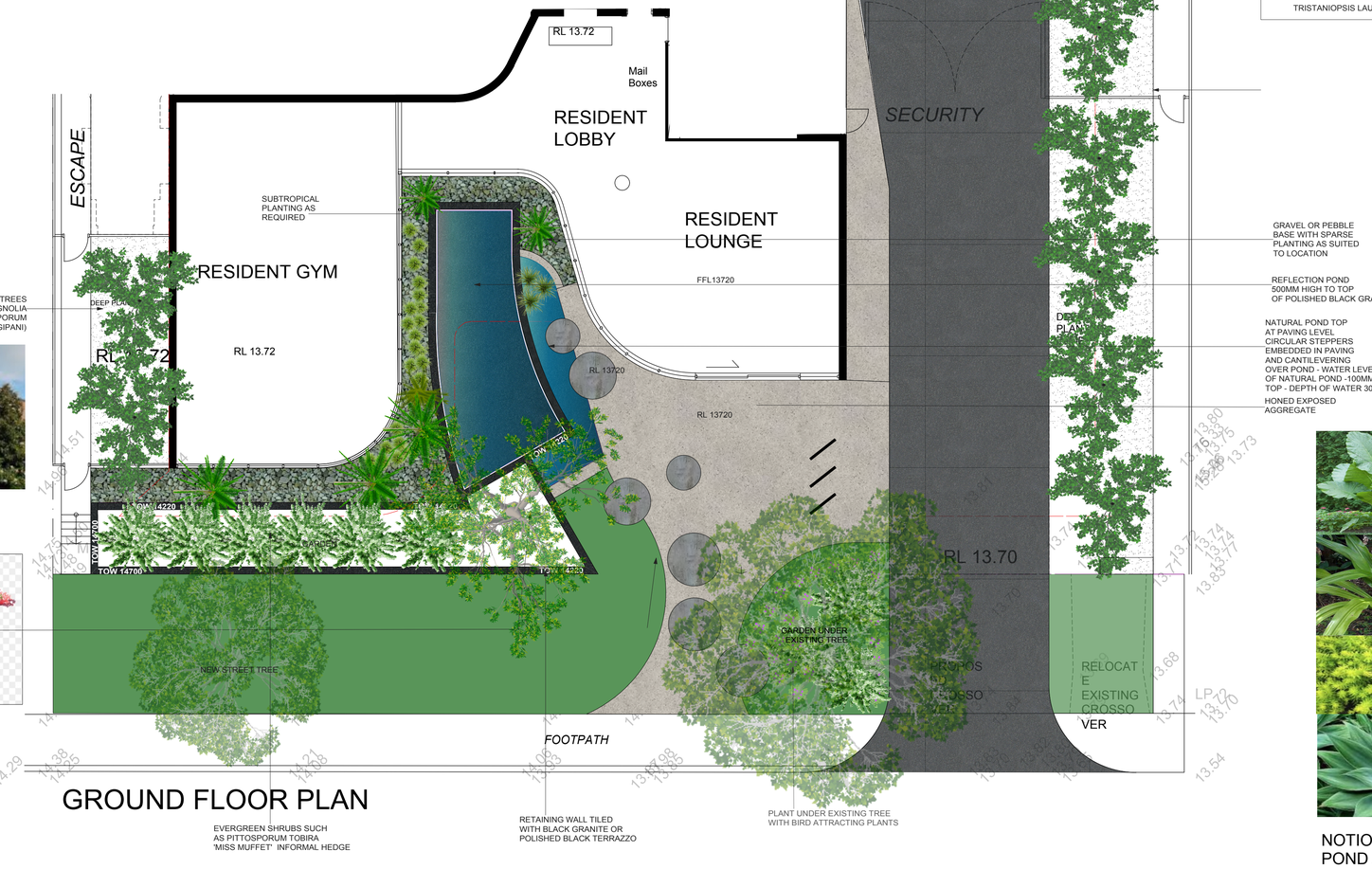

GROUND FLOOR PLAN

TRISTANIOPSIS LAURINA 'LUSCIOUS'

INDICATIVE EDGE TREATMENT FOR REFLECTION POND

NOTIONAL PLANTING FOR FRONT AROUND POND AND RETAINED GARDEN

NOTIONAL PLANTING FOR UNDER TREE

cultivART
Landscape Design
PO Box 365 Karrinyup WA 6921
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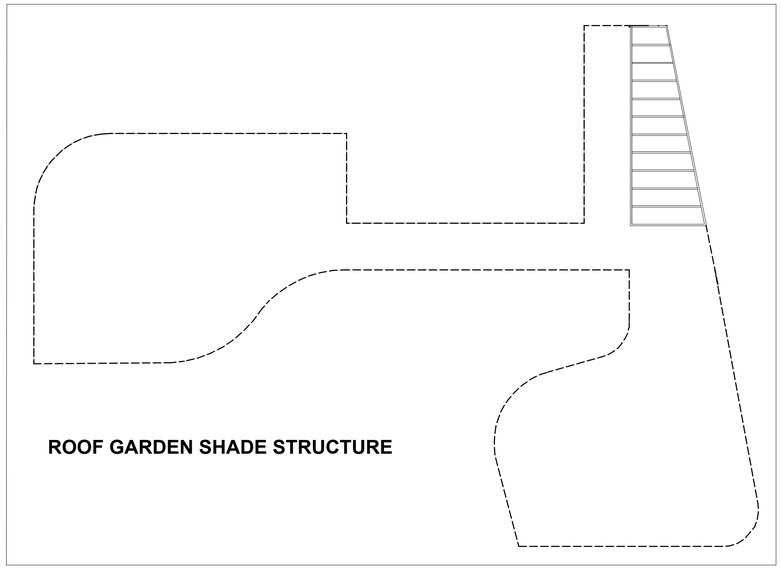
janine@cultivart.com.au

FRONT ENTRY CONCEPT

DEVELOPWISE
SITE: 3-5 WREN STREET
MOUNT PLEASANT

Proj No: C459/01
Dwg Date:NOVEMBER 2ND 2018
Revisions NOVEMBER 22ND 2018
Dwg Scale: 1:100 (A1)
Drawn: Janine Mendel

C459/02



KITCHEN GARDEN:
PERENNIAL HERBS SUCH AS
ROSEMARY, SAGE, CHIVES,
THYME, CURRY TREE, POMEGRANATE

CITRUS GROVE PLANTING:
LEMON, LIME, MANDARIN
WITH UNDERPLANTING IN
GARDEN SURROUNDING IT

SUCCULENT GARDEN SUCCULENTS SUITABLE FOR LOW DEPTH SOIL

CLIMBING WALL BEHIND COVERED AREA - NOTIONAL

SUCCULENT BOWL

POSSIBLE CONTAINER TREES FOR ROOF GARDEN PLEASE NOTE TREES WILL NOT GROW AS BIG IN CONTAINERS

NOTIONAL PLANTING

CASUARINA 'COUSIN IT'
PLANTING FOR GREEN BALUSTRADE

NOTES:

- All levels and dimensions to be checked on site before construction commences. If the property has not been surveyed prior to the landscape design, some dimensions may be inaccurate. All measurements at setout should be taken from house if no survey has been carried out. Some minor adjustments may be required due to paving and material sizes selected.
- This is not a working drawing. Further structural drawings may be required.
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- No warranty is offered for the success of specified planting. All plants are selected by a qualified horticulturalist but can be subject to the variables of extreme weather conditions, water deprivation and pests and diseases.

CONDITIONS:

- CultivArt Landscape Design owns the copyright of this design, which includes photographs of the garden illustrating the design and plant selection. No part of the plan may be reproduced without permission and photographs used by tradesmen, suppliers, landscaping installers and journalists for promotion or any other commercial purpose must credit CultivArt Landscape Design as the designer of the garden. Failure to do so will be considered a breach of copyright and further action will be taken.

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ROOF GARDEN CONCEPT

DEVELOPWISE
SITE: 3-5 WREN STREET
MOUNT PLEASANT

Proj No: C459/01
Dwg Date:NOVEMBER 2ND 2018
Revisions NOVEMBER 28th 2018
Dwg Scale: 1:100 (A1)
Drawn: Janine Mendel

C459/01

Proposed Residential Development

3-5 Wren Street, Mount Pleasant

TRANSPORT IMPACT AND CAR PARKING ASSESSMENT – V7

FINAL REPORT

Prepared for: Developwise
Prepared by: Move Consultants

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November 2018

DOCUMENT ISSUE AUTHORISATION

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2	1	25/10/18	REV	HH	HH
3	2	29/10/18	REV	HH	HH
4	3	07/11/18	REV	HH	HH
5	4	26/11/18	REV	HH	HH
6	5	27/11/18	REV	HH	HH
7	6	28/11/18	REV	HH	HH

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

1.1 OVERVIEW

This Transport Impact and Car Parking Assessment has been prepared by Move Consultants on behalf of Developwise with regard to a proposed residential development to be located at 3-5 Wren Street, Mount Pleasant in the City of Melville. The subject land is currently occupied by two vacant single-family dwellings and is located within the *Canning Bridge Activity Centre: Q2 – Ogilvie Precinct* area.

1.2 SITE LOCATION

The site is located on the north side of Wren Street approximately 45m east of the intersection with Ullapool Road and west of the intersection with Sleat Road, south of Canning Highway. Existing residential uses are in place to the immediate north, west, east and south of the site with commercial uses to the north-east of the site flanking both sides of Ogilvie Road and Kishorn Road, east of Sleat Road. The location of the site is shown in Figure 1.

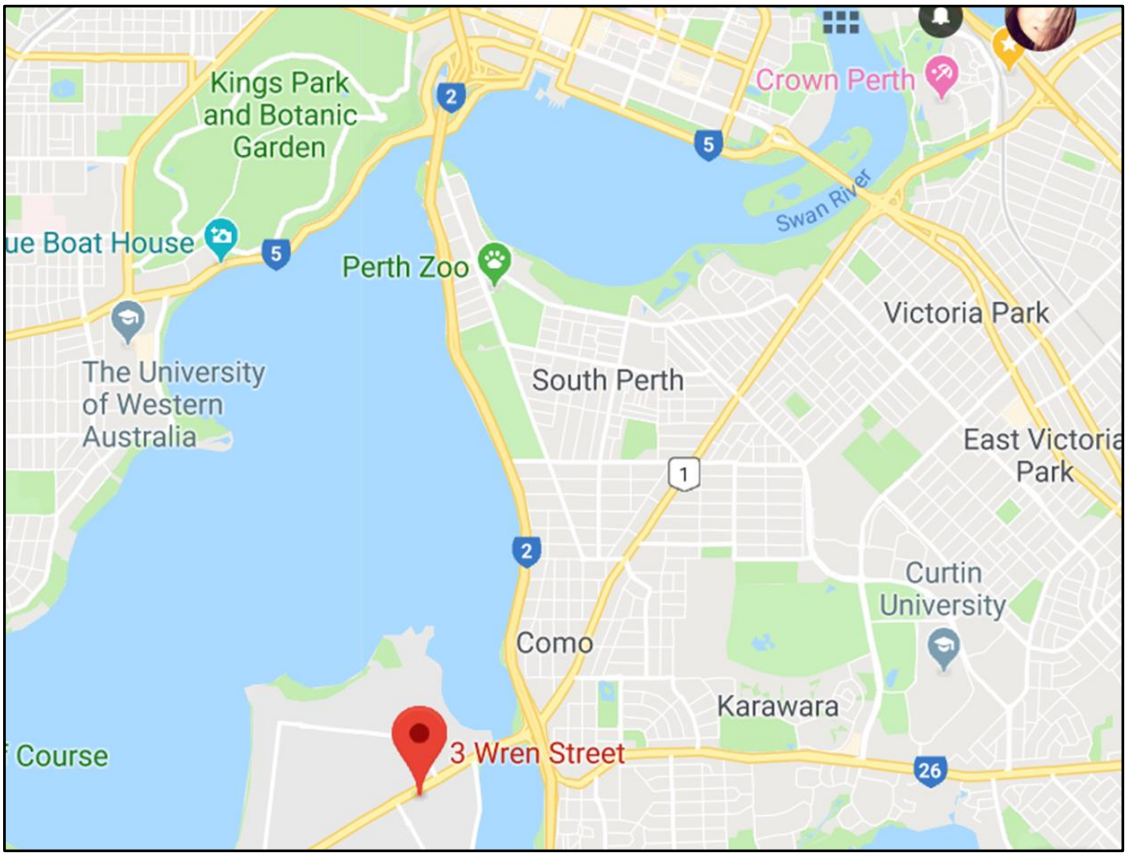


Figure 1: Site Location

The locational context is shown in Figure 2.

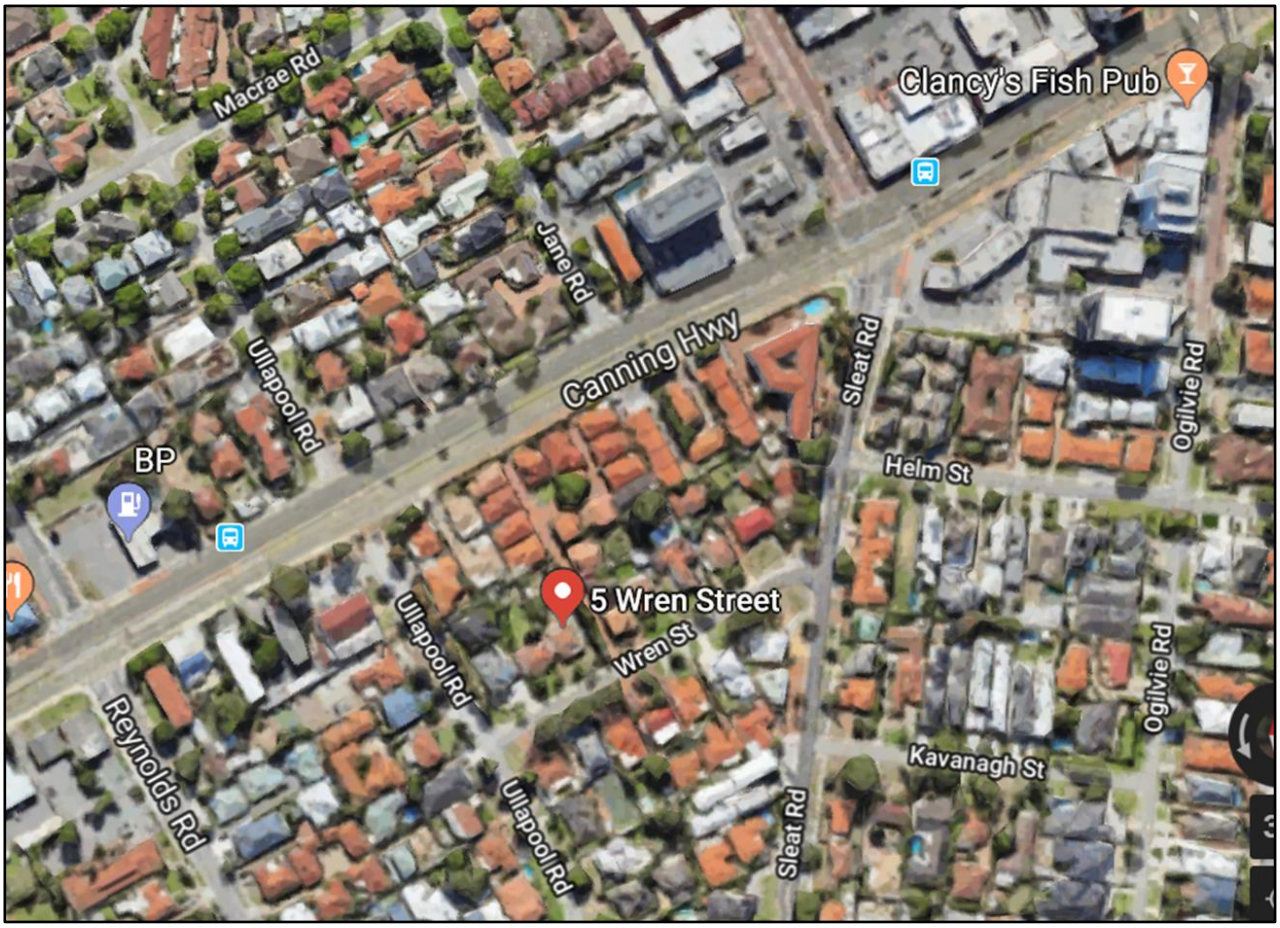


Figure 2: Metropolitan Context

1.3 SCOPE OF ASSESSMENT

This revised assessment has been prepared in accordance with the Western Australian Planning Commission's *Transport Assessment Guidelines for Developments: Volume 4 – Individual Developments* (2016).

Specifically, this report aims to assess the impacts of the proposed development on the boundary road network, namely within the Canning Bridge Precinct and along Wren Street, Sleat Road and Canning Highway to identify any modifications, to site or road layout, which may be required to serve the proposed site. In addition, the assessment considers the proposed access, circulation, and egress arrangements to and from the site.

For this purpose, the traffic operations in the vicinity of the site crossovers have been considered and assessed under both existing and future proposed traffic conditions with regard to the potential impacts from additional traffic generated by the proposed development of the site in the context of revised plans.

2. EXISTING SITUATION

2.1 ROAD INFRASTRUCTURE

Canning Highway, to the north of the site, is a primary east-west connecting road serving a broad catchment of users between Fremantle to the west and the Kwinana Freeway and other major activity nodes, such as Perth Airport, Burswood Peninsula and other important employment areas to the east. Sleat Road, to the east of the site, is a parallel north-south reliever road to Reynolds Road, Ardross Street and Riseley Street, all located to the west of the site, and also provides direct access into the Canning River-proximate residential areas to the immediate south of the subject lands. The property itself is located on Wren Street which is a local residential street connecting between Sleat Road to the east and Ullapool Road to the west.

The proposed development is to be constructed on a site currently occupied by two vacant single-family homes located at 3 and 5 Wren Street, Mount Pleasant, respectively, and within the Canning Bridge Activity Centre – Q2: Ogilvie Precinct, south of Canning Highway.

Canning Highway has been classified as a *Primary Distributor* road, under the Main Roads Western Australia Functional Road Hierarchy, and has been defined as *"…[providing] for major regional and inter-regional traffic movement and carry large volumes of generally fast-moving traffic with some roads [designated] as strategic freight routes, with all designated as National or State roads and managed by Main Roads*". Sleat Road, south of Canning Highway and to the east of the site, as well as Wren Street, running along the southern boundary of the site, and Ullapool Road, to the west of the site, have all been defined been classified as *Access Roads* which is defined as a road which *"…provides access to abutting properties with amenity, safety and aesthetic aspects having priority over the vehicle movement function. These roads are bicycle and pedestrian friendly and are managed by Local Government."* Ullapool Road and Wren Street have all been constructed as single undivided carriageways with a 6.0m seal with Sleat Road constructed as a single undivided carriageway south of Canning Highway flaring wide to an 8.0 to 9.0 divided carriageway on approach to the signalised intersection with Canning Highway. Figure 3 shows the functional road hierarchy in the vicinity of the site.

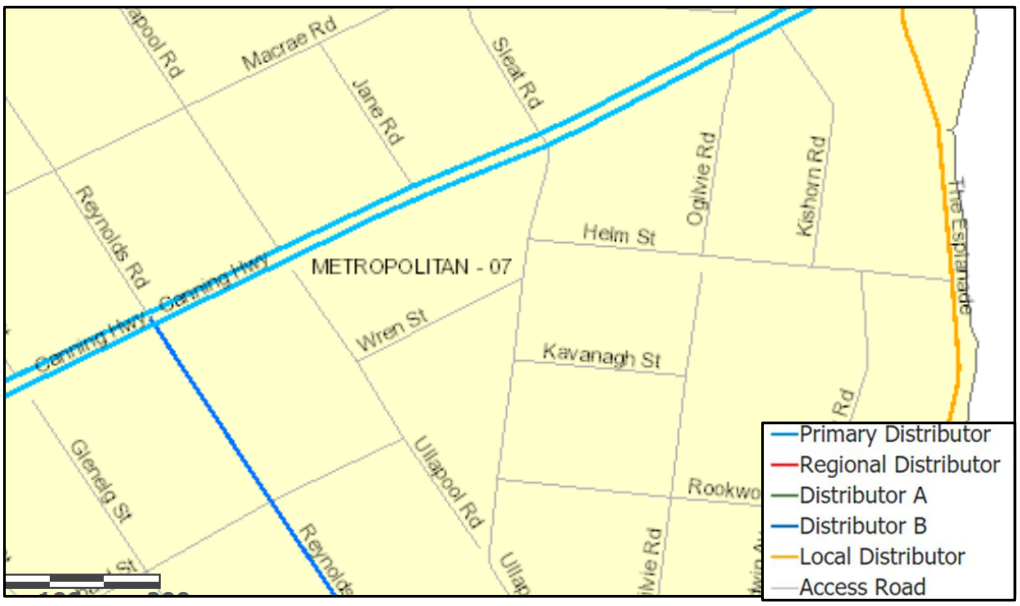


Figure 3: MRWA Functional Road Hierarchy

A detailed site visit was conducted on Thursday 18th October 2018 to collect information relating to existing road geometry, speed limits, and sightlines and to observe existing traffic operations on the adjacent boundary road network.

Canning Highway is a dual divided carriageway in the vicinity of the site and intersecting with Sleat Road, to the north-east of the site at a signalised intersection. There is a channelised left-turn lane operating under Give Way control on the westbound approach to the intersection with and a northbound left-turn channelised short slip lane on Sleat Road on approach to Canning Highway. Dedicated eastbound and westbound right-turn pockets are in place on Canning Highway on approach to Sleat Road. The intersections of Ullapool Road/Wren Street and Sleat Road/Wren Street operate under unsignalised T-intersection Give Way control.

The posted speed limit for Canning Highway in the vicinity of the site is 60kph with Ullapool Road, Wren Street and Sleat road operating under a speed limit of 50kph. The Canning Highway/Sleat Road signalised intersection is operated and maintained under the jurisdiction of Main Roads Western Australia with the balance of the roads, in the vicinity of the site operated and maintained by the City of Melville.

Existing traffic volumes were obtained via SCATS data from Main Roads Western Australia for the Canning Highway/Sleat Road signalised intersection and from the MRWA website. The existing daily volumes on Canning Highway to the north of the site are in the order of 47,700 vpd (MRWA, 2018). The existing volumes on Sleat Road, to the east of the site, are in the order of 5,900 vpd (MRWA, 2086) south of Canning Highway. Existing traffic data for Wren Street and Ullapool Road were not immediately available but based upon a review of existing traffic patterns in the area as well as spatial distribution of land uses and travel desire lines it is estimated that Ullapool Road, south of Wren Street, and Wren Street both carry less than 2,500 vpd.

2.2 PUBLIC TRANSPORT, PEDESTRIAN, AND CYCLIST FACILITIES

The subject site is served by high frequency bus services along Canning Highway, with a 2-minute walking distance. Existing services include Transperth Bus Routes 106, 881, 114, 910 and115 which collectively operate a 5- to 10-minute service during the weekday roadway peak periods and broadly 15-minute to 30-minute service during the mid-day and evening peak periods are serviced by bus stops on Canning Highway to the north and south side of the highway to the north-west of the site in the vicinity of the Ullapool Road intersection. The site is located approximately 1.1m due south-west of the Canning Bridge Railway Station which is outside the desirable 800m maximum walking distance; however, the frequent bus services just to the north of the site along Canning Highway provide direct access to the metropolitan railway network as well as connections to other bus services providing direct access to other major destination such as Perth Airport and Curtin University.

Figure 4 shows the existing public transport services in the area.

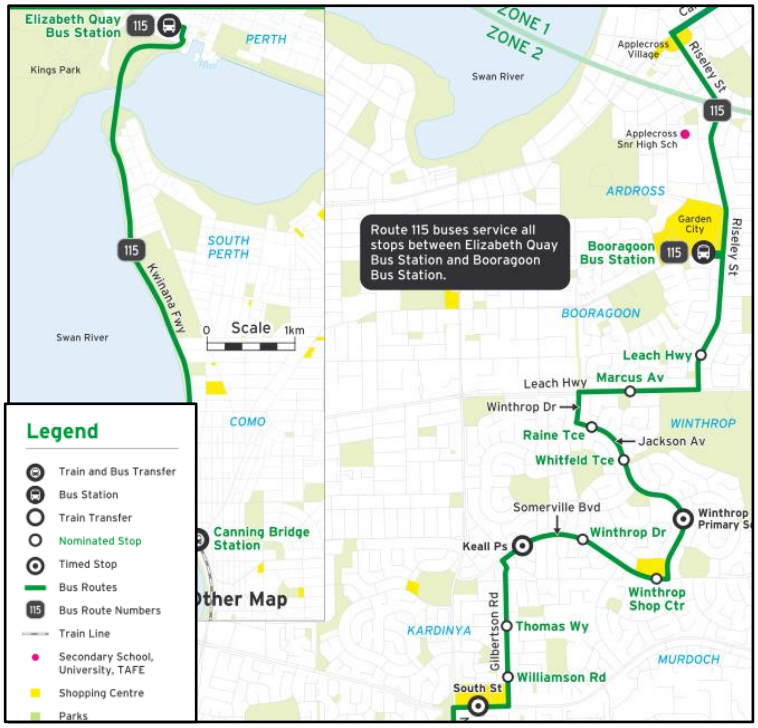


Figure 4: Existing Public Transport Services

Footpaths are in place on the north side of Wren Street, adjacent to the site's southern boundary, with footpaths in place on both sides of Ullapool Road, to the west of the site, and Sleat Road, to the east of the site. On-road cycle lanes are in place further to the west on both sides of Reynolds Road with a dual use off-road path, as part of the *Perth Bicycle Network,* in place along the Canning River foreshore to the east of the site connecting to the west side of the Kwinana Freeway. Wren Street has also been designated as a *Bicycle Boulevard.*

Figure 5 illustrates the existing pedestrian and cycling network in the vicinity of the site.

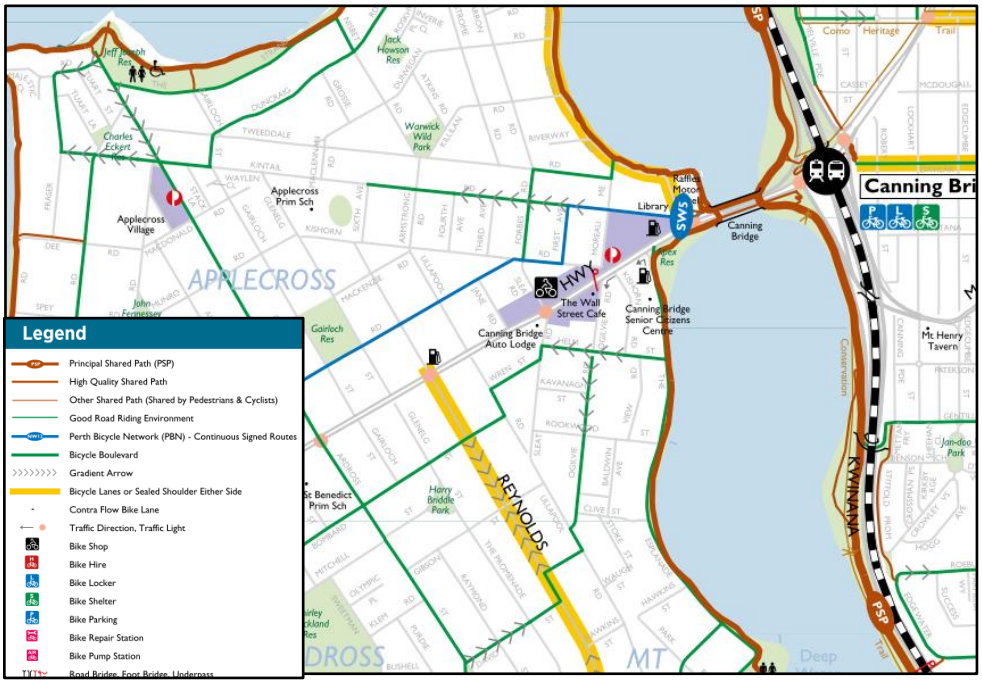


Figure 5: Existing Cycling and Pedestrian Infrastructure

3. DEVELOPMENT PROPOSAL

A site plan of the proposed development has been prepared by MJ Architects for Developwise. A copy of the site plan is contained in **Appendix A**.

3.1 PROPOSED LAND USES

The proposal seeks the development of a residential multiple dwelling building to include 47 apartments and 73 car parking bays.

The proposed development is to be constructed on the site which is currently occupied by two vacant single-family dwellings with a single consolidated crossover to be located near the eastern boundary of the site leading to car parking at the ground and first floor levels. The site is located within the *Canning Bridge Activity Centre,* as noted in the City of Melville's *Local Planning Scheme No. 6,* and within the Q2 – Ogilvie Precinct subject to H8 design criteria.

3.2 PROPOSED ACCESS AND PARKING ARRANGEMENTS

The proposed access arrangements are shown to consist of a single full movements crossover to be located near the eastern boundary of the site on the north side of Wren Street the property. This crossover leads to an at-grade car parking area on the ground level and then via a ramping arrangement to the first level.

The car parking supply on the site is proposed to consist of 73 car parking bays distributed at ground and first floor levels. No on-site residential visitor parking is proposed as none is required under the *Canning Bridge Activity*

Centre Plan. Rubbish collection will be undertaken via kerbside collection by the City of Melville with a Waste Management Plan prepared in consultation with the City with a bin enclosure located within the ground level car parking area.

3.3 END OF TRIP FACILITIES

Secure bicycle storage is proposed to be provided in individual storage lockers for residential tenancies plus 6 visitor bicycle parking bays.

4. TRANSPORT ANALYSIS

A traffic generation and distribution exercise has been undertaken to assess the potential traffic impacts associated with the proposed development. The aim of this exercise was to establish the traffic volumes which would be generated from the proposed development and to quantify the effect that the additional traffic has on the surrounding road network, specifically on the Wren Street frontage and on Sleat Road and Ullapool Road. Also, the volume and functionality of traffic at the proposed crossover to the north side of Wren Street.

4.1 TRIP GENERATION

The traffic generated by the proposed uses on the site has been predicted by applying trip generation rates for the *Residential Condominium/Townhouse* (Category 230) were derived from the Institute of Transportation Engineers' (ITE) *Trip Generation Manual, 10th Edition*.

While the site is located within an area with high quality public transport, cycling and pedestrian infrastructure and within walking distance to the Canning Bridge Precinct commercial centre, traffic generation has not been adjusted for assessment purposes in order to quantify the 'worst case' scenario in terms of impact on the local road network. The total net anticipated traffic generated by the proposed development is estimated to be in the order of 205 vehicular trips (103 inbound/102 outbound) on a daily basis; 16 vehicular trips (5 inbound/11 outbound) during the a.m. peak hour; and 18 vehicular trips (12 inbound/ outbound) during the p.m. peak hour.

4.2 TRIP DISTRIBUTION

Based upon the existing traffic patterns in the area and the spatial distribution of adjacent land uses, the following distribution for the proposed 'new' development generated traffic has been assumed:

- 70% to and from the north and east via Canning Highway/Sleat Road along Wren Street eastbound; and
- 30% to and from the west and south via Ullapool Road along Wren Street westbound.

The number of trips entering / exiting the site via the proposed site crossover and boundary road network has been assigned based upon the most logical route for vehicles to take given their origin / destination.

The number of trips entering / exiting the site via the proposed site crossover has been assigned based upon the most logical route for vehicles to take given their origin / destination. The total future site traffic's impact on the boundary road network was then adjusted to reflect the net impact as a result of the replacement of the existing restaurant uses by the mixed-use proposal. The resultant maximum increases in weekday daily and a.m. and p.m. peak hour-generated traffic under the 'worst case' scenario for the boundary road network would be as follows:

- Canning Highway:
    - Daily: +144 vpd
    - A.M. Peak Hour: +11 vph
    - P.M. Peak Hour: +13 vph
- Sleat Road:
    - Daily: +144 vpd
    - A.M. Peak Hour: +11 vph
    - P.M. Peak Hour: +13 vph
- Wren Street (Westbound):
    - Daily: +61 vpd
    - A.M. Peak Hour: +5 vph
    - P.M. Peak Hour: +5 vph
- Wren Street (Eastbound):
    - Daily: +144 vpd
    - A.M. Peak Hour: +11 vph
    - P.M. Peak Hour: +13 vph
- Ullapool Road (South):
    - Daily: +61 vpd
    - A.M. Peak Hour: +5 vph
    - P.M. Peak Hour: +5 vph

These increases in daily and a.m./p.m. peak hour volumes will have a minimal impact on existing traffic operations in the area and represent an increase in daily volumes of less than 1% on Canning Highway and 2% on Sleat road, south of Canning Highway Road and less than 10% on a short section of Wren Street east and west of the site and on Ullapool Road, south-west of the site. These increases in traffic are marginal and can be accommodated within the practical capacity of boundary road network.

Additional detailed traffic analysis is not warranted due to the relatively low entering and existing volumes at the crossover combined with the low ambient background traffic during peak periods on Wren Street, Sleat Road and Ullapool Road. Austroads' *Guide to Traffic Management* provides advice on the capacity of unsignalised intersections. For minor roads where there are relatively low volumes of turning traffic, capacity considerations are usually not significant and capacity analysis is unnecessary. Intersection volumes below which capacity analysis is unnecessary are indicated in **Table 1.**

Table 1: Threshold Analysis Parameters (Austroads, 2009)

Type of road	Light cross and turning volumes maximum design hour volumes (vehicles per hour (two way))		
Two -lane major road	400	500	650
Cross road	250	200	100

As indicated by the table, the peak hour volumes on the boundary local road network in the vicinity of the site would be required to reach over 650 vehicles per hour before additional analysis of the intersection is warranted. It has been assumed that the weekday roadway peak hour volumes on Wren Street and Ullapool Road are less than 650 vph which is below the required threshold of 650 vehicles per hour which would require a more detailed analysis with the maximum turning volumes into and out of the site crossover in the order of a maximum of 20 vph.

5. VEHICULAR ACCESS AND PARKING

5.1 ON-SITE QUEUING, CIRCULATION, AND ACCESS

The site plan indicates a single consolidated crossover to be located on the north side of Wren Street, near the eastern boundary of the site. This crossover will provide direct access into the ground floor and first floor car parking areas. The proposed site crossover will facilitate full movements to and from Wren Street and will allow for entry and exit in forward gear by all vehicle movements.

The proposed layout of the respective car parking areas is consistent with relevant Australian and Council standards. The proposed 5.8m to 6.0m crossover to and from Wren Street will allow for effective and efficient two-way simultaneous inbound and outbound vehicular movvements.

It should be noted that there is a significant supply of on -street public parking on the local road network if visitor parking is required.

A review of the proposed on-site circulation and car parking layout was undertaken to assess the adequacy of the proposed site access and circulation in addition to service/delivery areas on the site. The design of the proposed car parking areas adjacent to the rear of the building on the site has been reviewed using AutoTrack and the relevant Australian Standards and Austroads guidelines, with the proposed design considered adequate to accommodate on-site manoeuvring and circulation. Collection of waste will be carried out by collection vehicles as part of the regular weekly (1 x per week) by the City of Melville waste management vehicles via kerbside collection. It is our understanding that the City is currently exploring acquisition of additional waste management vehicles of a smaller dimension in order to enter residential car parking areas to collect bins. The proposed design of the entry area into the site's car parking area where the bin enclosure is located can accommodate vehicles up to 2.85m in height entering the garage area and up to 3.0m when fully engaged. Future on-site waste collection activities by the City utilising these vehicles will be of a sufficient size and scale so as to reverse into the site crossover into the ground floor level car parking area in order to allow for direct and proximate collection of waste on-site with all vehicles exiting in forward gear. It is anticipated that the maximum number of movements will be 2 trips per week (1 inbound/1 outbound).

A review of sightlines to and from the east and west from the site crossover indicates that there are sufficient sightlines in place to accommodate safe entering and exiting movements at these locations and for passing traffic on Wren Street to effectively see a vehicle stopped in Wren Street to turn right into the site crossover.

A review of the crash history along Wren Street between Ullapool Road and Sleat Road in the vicinity of the proposed site crossover for the 5-year reporting period 2013-2017 indicates that there has only been 1 recorded crash along this section of road with no driveway crashes recorded. This would indicate that there would be minimal risk associated with entering and exiting out of the proposed crossover to and from Wren Street due to the low speed environment and good sightlines to both the east and west along Wren Street.

5.2 PARKING DEMAND AND SUPPLY

The required car parking supply associated with the proposal is consistent with the City of Melville's planning policies, TPS and the *Canning Bridge Activity Centre Plan: Q2 – Ogilvy Quarter*. No on-site visitor parking is required. The proposed on-site supply of 73 bays is deemed sufficient.

The proposal's location on a high frequency bus route confirms that this approach is consistent with the WAPC's abovenoted DC Policy 1.6 which provides the following guidance with respect to car parking concessions due to proximity to public transport options:

Excerpts from Clause 4.6: state *"…in carrying out the necessary analysis as part of the local planning strategy process, and in developing related planning provisions, local governments should have particular regard to matters such as…":*

- the encouragement of public transport use over car use;
- the encouragement of mixed use development, both generally and within individual developments;
- the development and application of scheme parking standards that reflect the availability within the precinct of transit facilities and that provide discretion to vary standards, and to progressively replace surface level car parking close to stations with other more transit supportive uses over time;
- the potential to use planning provisions to provide incentives for appropriate development in transit oriented precincts, including reduced parking standards and floor-space 'bonuses'; and
- For the immediate environs of transit facilities, local government is encouraged to consider the preparation of precinct plans that provide greater detail with respect to both land use and the physical form and relationship of development in the precinct to the transit facility, including design guidelines."

Efficient allocation of on-site car parking based upon expected use or activity maintains this aim through a corresponding restriction in on-site parking supply. This is known to be a primary factor in promotion of mode shift away from car-as-driver modes and towards single car households utilising the available alternative modes including carpooling, public bus transport and cycling. The location of the subject site proximal to major public transport and other non-motorised transport infrastructure for these alternative modes will assist in the transition towards more sustainable transport in the area.

This approach is also consistent with the stated objectives of Western Australian Planning Commission in documentation including and *Directions 2031 and Beyond* and *Liveable Neighbourhoods.*

It can therefore be concluded that the proposed on-site car parking supply is consistent with good and orderly planning and with relevant Council and State Government planning guidelines and endorsed policies.

6. CONCLUSIONS

The aim of this Transport Impact and Parking Assessment was to discuss the traffic likely to be generated by the proposed residential multiple dwelling development proposed at 3-5 Wren Street, Mount Pleasant, in the City of Melville and to assess the impacts associated with anticipated site-generated upon the adjacent transport infrastructure. In particular, the assessment considered the impacts on the boundary road as well as on the Wren Street frontage of the site.

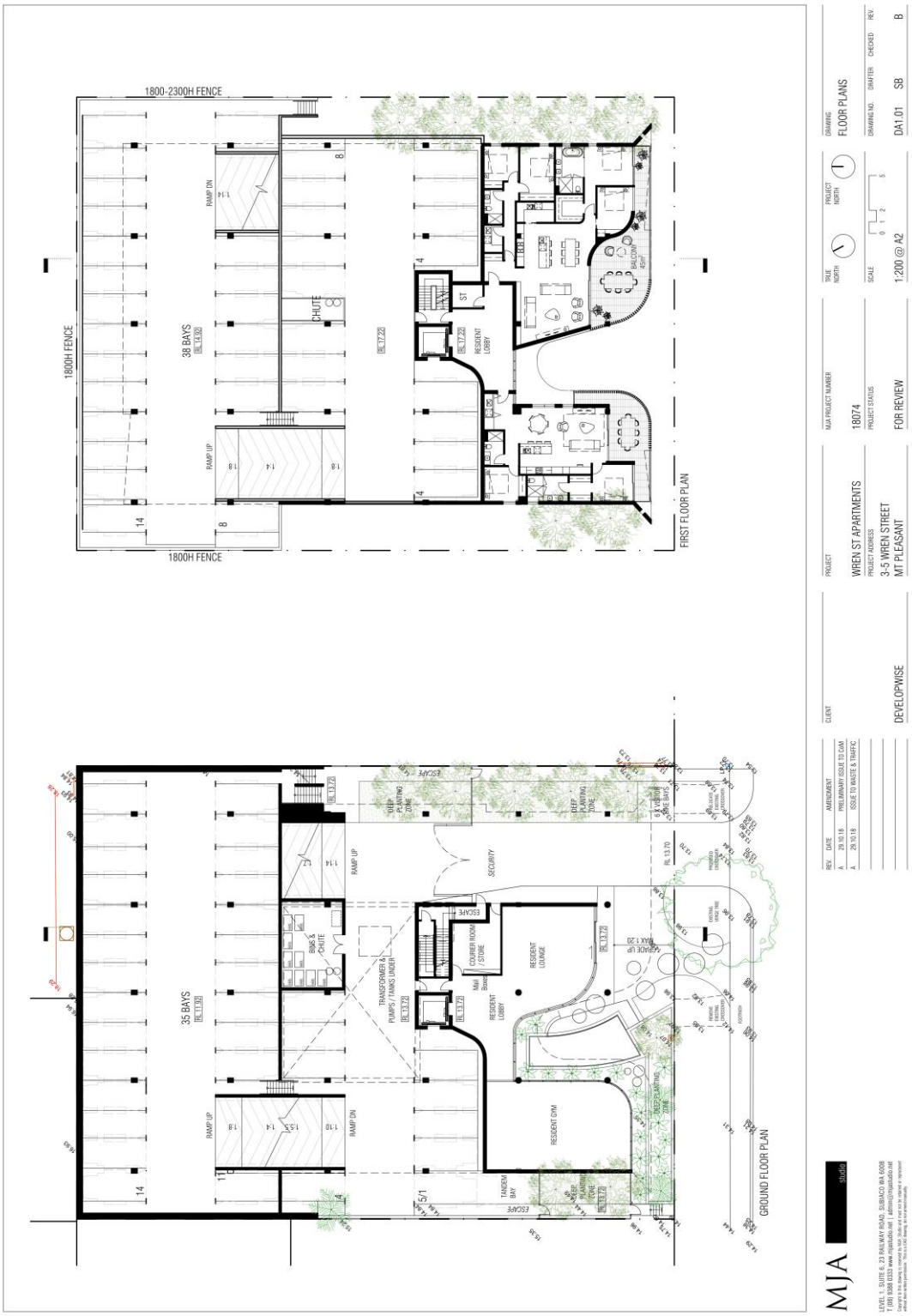
The results of the assessment indicate that the expected net increase in site-generated traffic can be comfortably accommodated within the practical capacity of the boundary road network with no safety or operational issues expected in the context of a revised site plan.

A review of the proposed on-site circulation and car parking layout was undertaken to assess the adequacy of the proposed site access and circulation in addition to service/delivery areas on the site. The design of the proposed car parking areas adjacent to the rear of the building on the site has been reviewed using AutoTrack and the relevant Australian Standards and Austroads guidelines, with the proposed design considered adequate to accommodate on-site manoeuvring and circulation. Rubbish collection will be undertaken via kerbside collection by the City of Melville waste management vehicles. A separate Waste Management Plan will be prepared and submitted to Council under separate cover.

The proposed on-site car parking supply of 73 bays for the site is consistent with the City of Melville's *Local Planning Scheme No. 6,* the *Residential Design Codes, Canning Bridge Activity Centre Plan* and *Local Planning Policy 1.6.* Bicycle parking will be provided on the site consistent with the required Council guidelines.

In conclusion, it should be noted that based both on a review of the modelled total traffic assessment and observed traffic operations of the boundary road system, the anticipated site-generated traffic associated with the proposed development can be accommodated within the existing practical capacity and functional road classification of the local road system.

APPENDIX A: SITE PLAN


1800-2300H FENCE
1800H FENCE
38 BAYS
RL 14.92
CHUTE
RL 17.22
RESIDENT LOBBY
ST
RAMP DN
RAMP UP
BALCONY 45m²
FIRST FLOOR PLAN
1800H FENCE
35 BAYS
RL 11.92
RAMP UP
RAMP DN
BINS & CHUTE
COURIER ROOM / STORE
TRANSFORMER & PUMPS / TANKS UNDER
RESIDENT LOBBY
RESIDENT LOUNGE
RESIDENT GYM
SECURITY
ESCAPE
TANDEM BAY
DEEP PLANTING ZONE
SHALLOW PLANTING ZONE
GROUND FLOOR PLAN
REV DATE AMENDMENT
A 29.10.18 PRELIMINARY ISSUE TO CLIENT
A 29.10.18 ISSUE TO WASTE & TRAFFIC
CLIENT
DEVELOPWISE
PROJECT
WREN ST APARTMENTS
PROJECT ADDRESS
3-5 WREN STREET
MT PLEASANT
MJA PROJECT NUMBER
18074
PROJECT STATUS
FOR REVIEW
TRUE NORTH
PROJECT NORTH
SCALE
1:200 @ A2
DRAWING
FLOOR PLANS
DRAWING NO.
DA1.01
DRAWN
SB
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REV.
B
MJA
studio

3-5 Wren Street, Mount Pleasant

Waste Management Plan
FINAL REPORT – V6

Prepared for: Developwise
Prepared by: Move Consultants

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November 2018

DOCUMENT ISSUE AUTHORISATION

Issue	Rev	Date	Description	Checked	Approved
1	0	25/10/18	FINAL REPORT	HH	HH
2	1	29/10/18	REV	HH	HH
3	2	07/11/18	REV	HH	HH
4	3	26/11/18	REV	HH	HH
5	4	27/11/18	REV	HH	HH
6	5	28/11/18	REV	HH	HH

TABLE OF CONTENTS

PAGE

1. INTRODUCTION

Move Consultants has prepared this Waste Management Plan for the proposed 47 multiple dwelling development to be located at 3-5 Wren Street, Mount Pleasant in the City of Melville. This plan has been developed as part of the requirements dictated by the proposed Development Application for the proposal.

The key objectives of the plan outline the equipment and protocols which will be implemented and adopted to manage all waste (both refuse and recycling) on the site. Specifically, the Waste Management Plan (WMP) demonstrates that the development will be designed to:

- Adequately cater for the anticipated quantities of waste and recyclables to be generated;
- Provide a suitable bin storage area and hazardous waste area including appropriate disposal receptacles; and
- Allow for the efficient collection of receptacles by appropriate waste collection vehicles.

The subject site is located on an existing local road primarily serving existing residential uses to all sides within the suburb of Mount Pleasant and also located within the Canning Bridge Activity Centre The location of the site is shown in Figure 1.

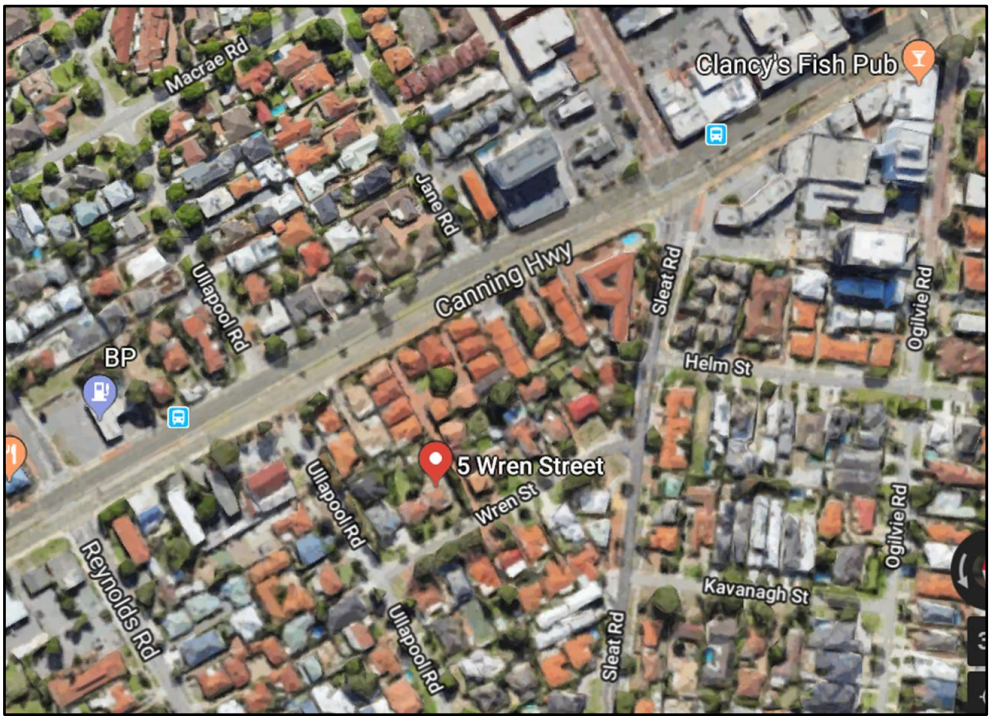


Figure 1: Location Context

The Applicant plans to demolish the existing two (2) single-family dwellings on the consolidated property and construct a 47-unit apartment building on the property to be served by a single crossover to the north side of Wren Street near the site's eastern boundary, between Ullapool Road and Sleat Road.

A site visit was conducted on 18th October 2018 to identify any potential traffic-related issues associated with the proposal and access to the bin storage area. A separate Transport Impact and Parking Assessment has been issued for the proposal.

Waste management associated with the development will be consistent with City of Melville's requirements, relevant State Government requirements and industry guidelines and standards.

2. WASTE GENERATION

The volume of waste generated by the uses on the site is typically determined by the types of activities, and overall size of the development. Once determined, the appropriate generation rates for these activities can be assigned. To understand the waste generated at the development, the types of waste generating activities and their operating days were also considered. The estimated quantity of waste will then determine the number of receptacles required.

2.1 WASTE GENERATION RATES

The anticipated volumes of general waste (refuse) and recycling waste for the proposed residential apartments has been based on the City's *Waste and Recycling Collection for Multiple Developments – Local Planning Policy 1.3* (2016).

Table 1 shows the anticipated general waste to be generated by the proposal.

Table 1: Estimated General Waste Generation

Type of Activity	Number of Dwellings	Waste Generation Rate (L/week)	General Waste Generated/Week
Residential Multiple Dwellings	47	80	3,760 L

2.2 RECYCLABLE WASTE

Table 2 shows the anticipated recyclable waste to be generated by the proposal.

Table 2: Estimated Recycling Waste Generation

Type of Activity	Number of Dwellings	Waste Generation Rate (L/week)	Recycling Waste Generated/Week
Residential Multiple Dwellings	47	40	1,880 L

2.3 TOTAL WASTE

The total weekly volume of waste would be 3,760L of general waste and 1,880L of recycling waste in total.

3. WASTE MANAGEMENT RECOMMENDATIONS

In order to ensure that waste is managed appropriately and safely, it is essential that adequate space be provided on site within the bin storage area to accommodate the required storage receptacles.

3.1 RESIDENTIAL APARTMENT INTERNAL RECEPTACLES

In order to promote positive recycling behaviour and to maximise diversion of recyclables from existing landfill facilities, a dedicated bin chute on each level will be provided to allow for efficient and effective disposal of waste materials with separate chutes for each of recycling and general waste into the bin area located at ground level.

3.2 BIN STORAGE AREA

General waste and recyclables generated by the proposal will be collected through a dedicated chute system into a dedicated and enclosed bin storage area within the ground floor car parking area. The following outlines the recommended bin sizes in terms of capacity and design requirements.

It is recommended that once weekly waste collection be undertaken by the City of Melville via kerbside collection with 6 x 660L bins for general waste and 3 x 660L bins for recycling waste be implemented within this area. The allocated bin area can comfortably accommodate these bins in the context of the preferred location of the bin store within the ground floor car parking area and will allow for efficient disposal of waste via a chute system from each residential level as shown in the attached site plan.

3.3 EXTERNAL COLLECTION OF WASTE

Collection of waste will be carried out by collection vehicles as part of the regular weekly (1 x per week) by the City of Melville waste management vehicles via kerbside collection. It is our understanding that the City is currently exploring acquisition of additional waste management vehicles of a smaller dimension in order to enter residential car parking areas to collect bins. The proposed design of the entry area into the site's car parking area where the bin enclosure is located can accommodate vehicles up to 2.85m in height entering the garage area and up to 3.0m when fully engaged. Future on-site waste collection activities by the City utilising these vehicles will be of a sufficient size and scale so as to reverse into the site crossover into the ground floor level car parking area in order to allow for direct and proximate collection of waste on-site with all vehicles exiting in forward gear. It is anticipated that the maximum number of movements will be 2 trips per week (1 inbound/1 outbound).

The Owner will arrange for the acquisition of the required 660L receptacles where required with a verge hardstand negotiated directed with the City, if viable and practicable.

4. WASTE BIN STORAGE AREAS

4.1 DESIGN OF BIN STORAGE AREA

The dedicated bin storage area will be located at ground level adjacent to the west side of the north-south entry aisle from Wren Street central within the car parking area. The design of the bin storage area should consider the following:

- Impervious floor draining to the existing sewer.
- Installation of a tap for washing and rinsing of bins and bin storage area, as required.
- Adequate manoeuvring space to remove bins.
- No double stacking of receptacles.
- Appropriate signage, where required.
- Bin storage should be undercover and be designed so as not to permit stormwater to enter the drain.
- Bin storage area to be located behind the building setback line.
- Adequate aisle width for easy manoeuvring of receptacles.
- No double-stacking of receptacles.
- Receptacles to be reasonably secured from theft and vandalism.
- Receptacles ideally to not be visible from property boundary or areas trafficable by the public.
- Receptacles and storage areas within the bin storage area to be monitored during the operation of the development to ensure that the receptacles are sufficient.
- Staff will be assigned to oversee all relevant aspects of the waste management associated with the proposal.

It should be noted that the number of receptacles has been based upon a once-weekly collection regime; however increased collection frequency will lower the number of receptacles required. Waste receptacle and storage space within the dedicated bin storage area will be monitored during the operation of the development to ensure that the proposed number of collection receptacles is sufficient.

4.2 WASTE CHUTE SYSTEM

In order to ensure effective and efficient waste disposal, a dual chute system will be installed which allows users to separate general waste from recyclables with chutes in place on each floor leading down to the ground floor bin storage area.

The waste chute area on each floor will be located within the dedicated storage locker area on each floor. Chutes will typically be a minimum of 810mm in diameter and required to be acoustically insulated and odour absorptive with appropriate ventilation installed including an extraction fan at the top of the chute. Chutes will be routinely cleaned via a flushing operation.

5. BULK AND GREEN WASTE COLLECTION

The City of Melville provides for annual bulk and green waste collection for residential properties via verge collection. Any bulk waste would need to be placed on the verge, in conjunction with the City's requirements. Given the proposed high-quality streetscape along the southern frontage of the proposal, it is proposed that bulk waste materials and items be removed from the property as it is generated. Removal of these bulk waste materials will be the sole responsibility of the residential tenants with the Property Manager to monitor bulk waste removal and provide assistance and advice, as required.

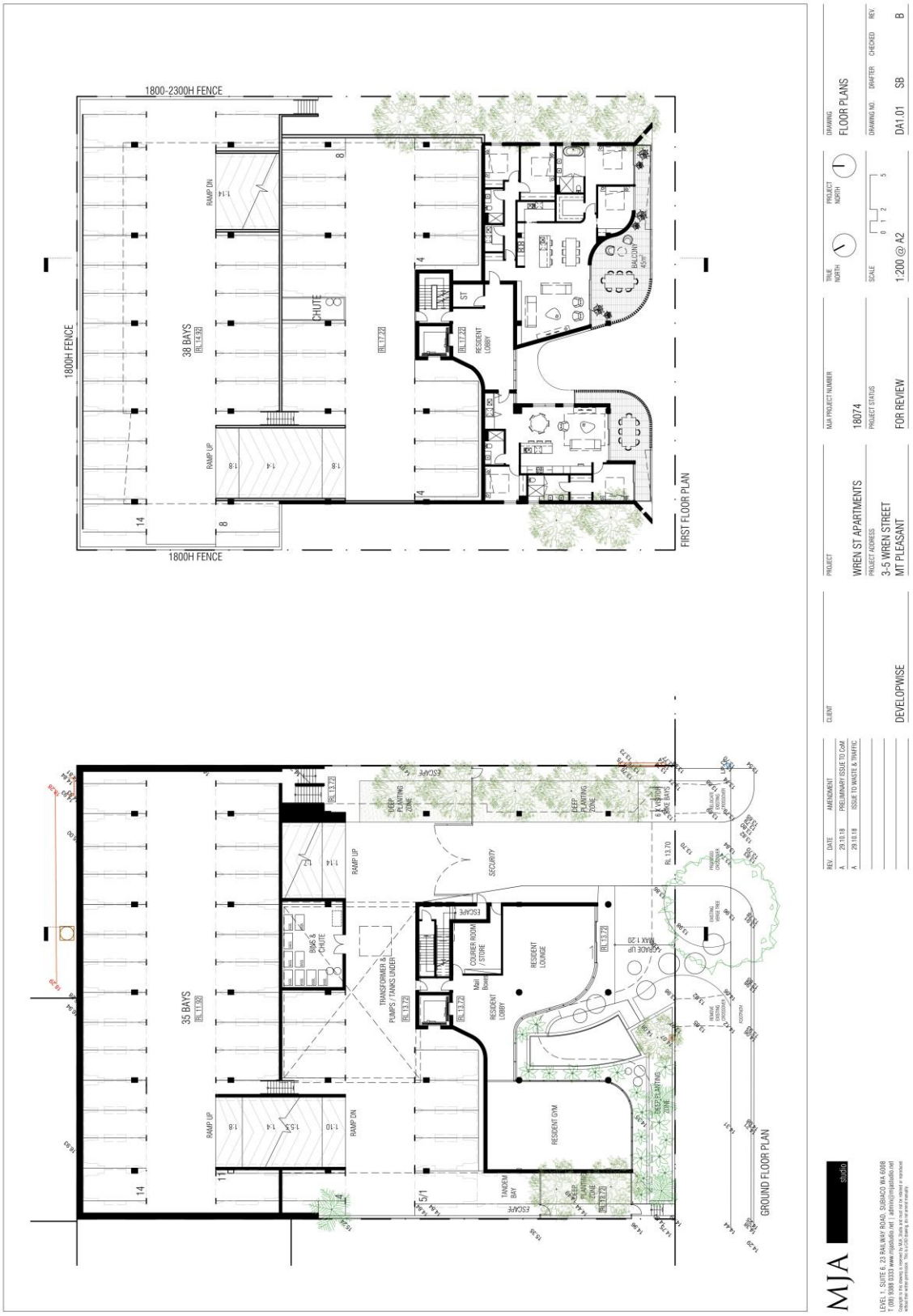
Green waste collection is anticipated to be negligible as the proposal consists of apartment units and would therefore be removed as required. Removal of green waste would typically be the responsibility of the Property Manager.Detailed information in relation to the timing of bulk and green waste collection can obtained from the City of Melville.

6. PROPERTY MANAGEMENT RESPONSIBLITIES

Property managers will be appointed to be responsible for the following tasks associated with Waste Management on the site:

- Monitoring and maintenance (including cleaning) of the waste receptacles, bin chutes and bin storage areas.
- Management of bulk waste and green waste collection, where required.
- Engage on an ongoing basis with residents to develop opportunities to increase resource recovery and minimise general waste volumes.
- Responsible for placing both general and recycling waste receptacles on the kerbside on bin collection days until such time as the City makes arrangements with the Strata Manager to collect waste on-site.
- Regularly engage with Council to ensure an effective and efficient waste service is maintained.
- Ensure all residents are informed in relation to Waste Management Protocols at the developments and their respective responsibilities in accordance with this plan.

APPENDIX A: GROUND LEVEL PLAN PLUS BIN ARRANGEMENT


1800-2300H FENCE
1800H FENCE
38 BAYS
RL 13.30
RAMP DN
RAMP UP
CHUTE
RL 17.22
RESIDENT LOBBY
ST
BALCONY
FIRST FLOOR PLAN
1800H FENCE
35 BAYS
RL 13.30
RAMP UP
RAMP DN
BINS & CHUTE
TRANSFORMER & PUMPS / TANKS UNDER
RL 13.72
COURIER ROOM / STORE
Mail Boxes
RESIDENT LOBBY
SECURITY
RESIDENT LOUNGE
RESIDENT GYM
TANKPEN BAY
DEEP PLANTING ZONE
RL 13.70
GROUND FLOOR PLAN
DRAWING
FLOOR PLANS
DRAWING NO.
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DRAFTER
SB
CHECKED
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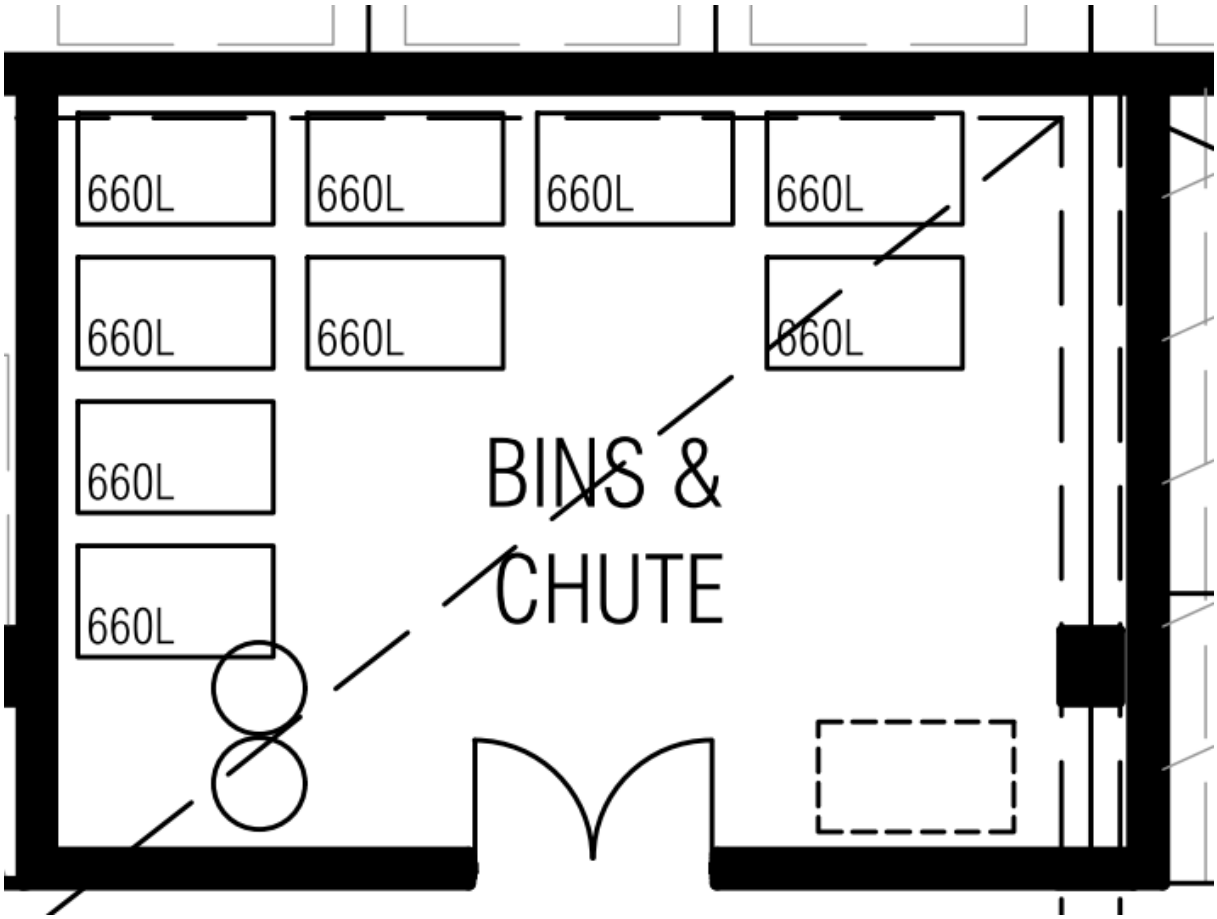
B
SCALE
1:200 @ A2
TRUE NORTH
PROJECT NORTH
MJA PROJECT NUMBER
18074
PROJECT STATUS
FOR REVIEW
PROJECT
WREN ST APARTMENTS
PROJECT ADDRESS
3-5 WREN STREET
MT PLEASANT
CLIENT
DEVELOPWISE
REV. DATE AMENDMENT
A 29.10.18 PRELIMINARY ISSUE TO CoM
A 29.10.18 ISSUE TO WASTE & TRAFFIC
MJA studio
LEVEL 1, SUITE 6, 23 RAILWAY ROAD, SUBIACO WA 6008
T (08) 9388 0333 | www.mjastudio.net | admin@mjastudio.net


660L
660L
660L
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660L
660L
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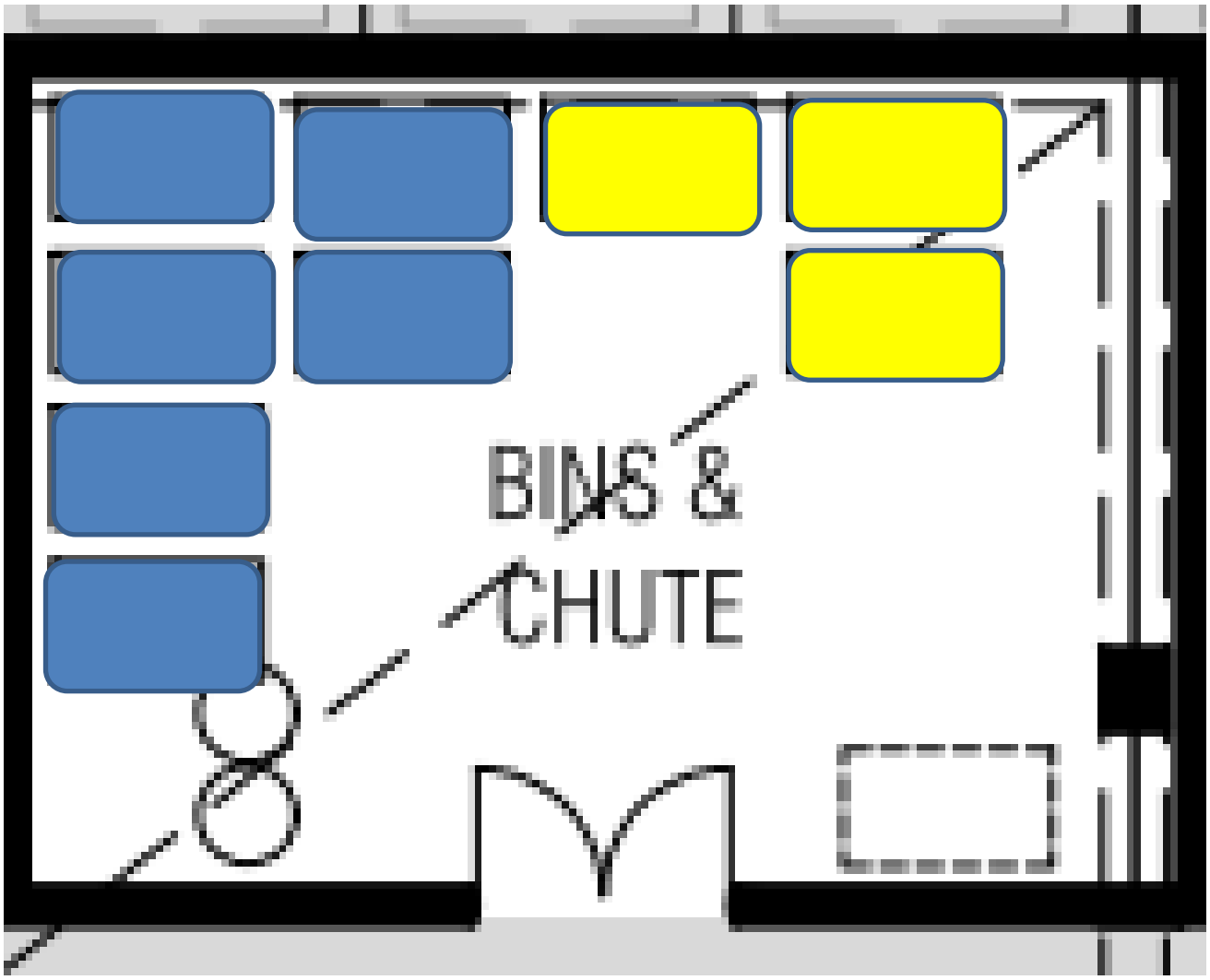
BINS &
CHUTE



GENERAL WASTE (660L BIN)

RECYCLING WASTE (660L BIN)

SANCTUARY APARTMENTS

3 - 5 WREN STREET, MOUNT PLEASANT

DEVELOPMENT APPLICATION ISSUE _ REV A
(30.11.2018)

MJA studio

PRINCIPLE 1_

CONTEXT & CHARACTER

CBSP...

EACH NEW PROJECT SHOULD FIND A DIFFERENT LOCAL STORY TO TELL...

MT PLEASANT...

SHAPE OF THE BAYS

LIFE ON THE WATER

THE FLURRY OF WATER BIRDS AS THE WIND CHANGES

DARTERS DRYING THEIR WINGS OUT IN THE SUN...

PRINCIPLE 1_

CONTEXT & CHARACTER

A GARDEN SUBURB...

TRANSFORMING TO A 21ST CENTURY TRANSIT HUB

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

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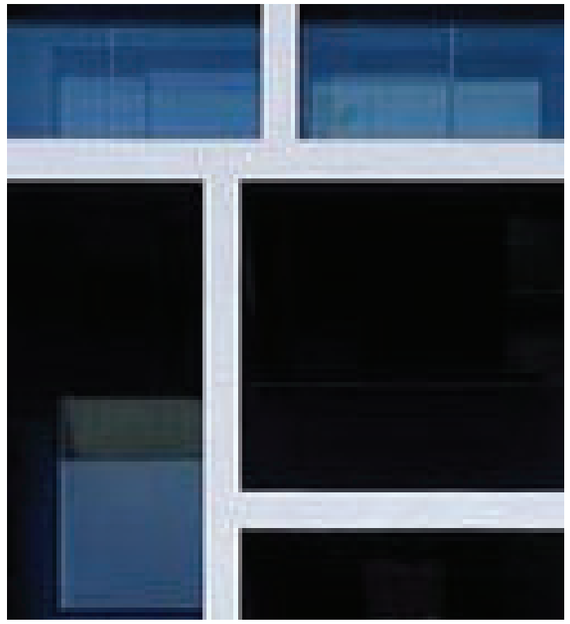
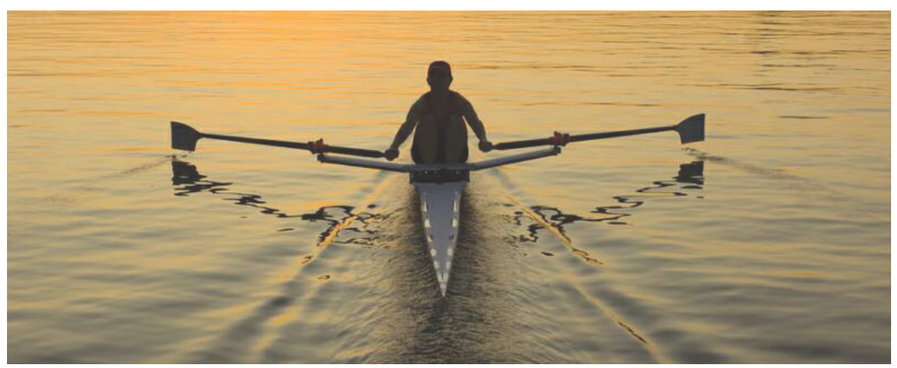
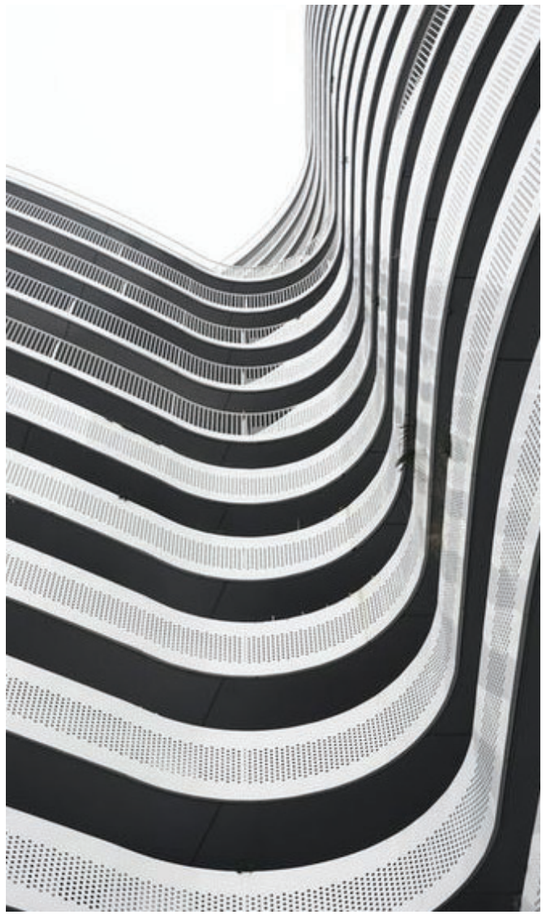






PRINCIPLE 1_

CONTEXT & CHARACTER

CONTRAST & SCULPTURAL FORMS REFLECT RIVER LIFE & LOCALITY

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

GREATER SITE CONTEXT

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

PLANNING ANALYSIS

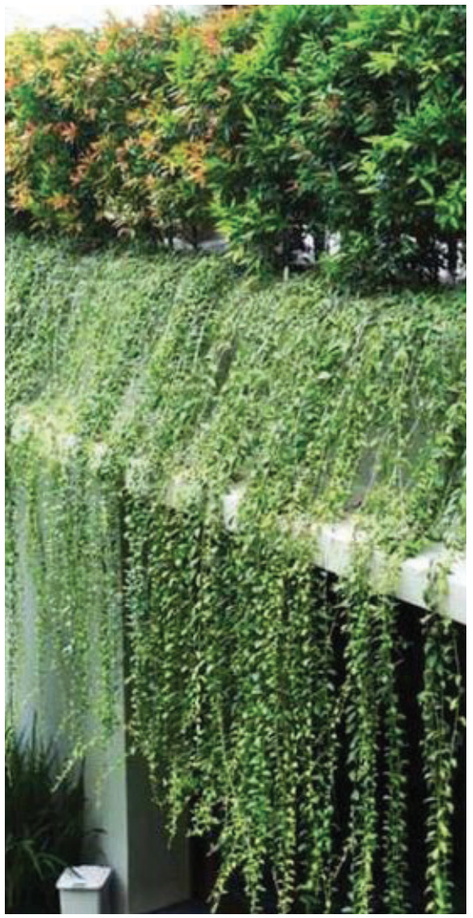
SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

SITE ANALYSIS

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio



PRINCIPLE 2_

LANDSCAPE QUALITY

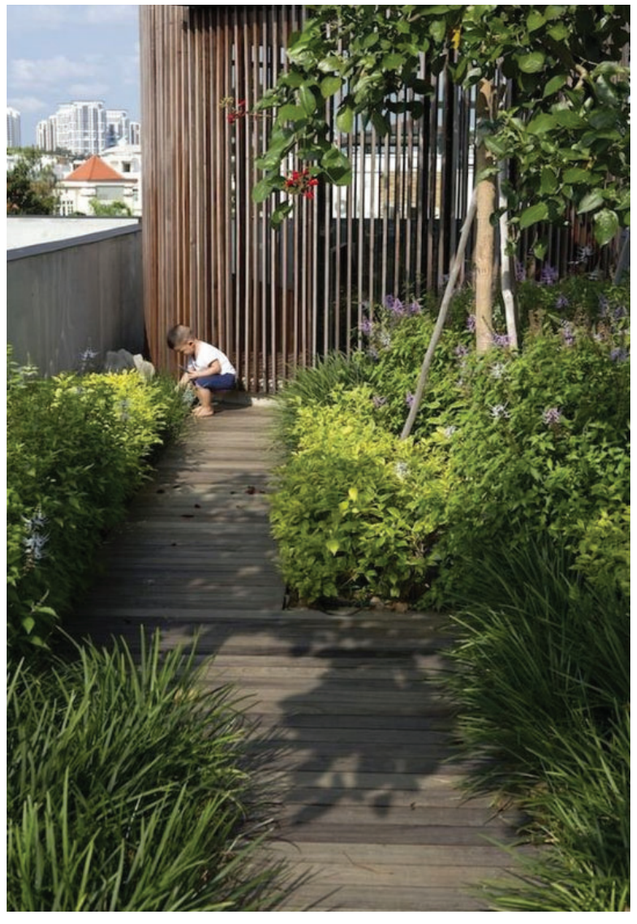
LANDSCAPE ZONES MIMIC THE DOMESTIC EXPERIENCE

- The integration of landscape has been considered as part of the overall building strategy.
- The ground floor plane looks to echo the experience one has when passing through the ‘polite’ front garden through to the front door - on an exaggerated scale.
- The reflection pond creates a serene micro climate, reflecting light within the swoop of the building over and providing a stage for the public art component.
- As one moves along the street boundary to the west, landscaping filters views of the residents gym beyond.
- An additional street tree is proposed within the verge.
- Deep planting zones abutting the existing residential neighbours to the east and west create green screens - 8% of the site area is provided as deep planting.

PROPOSED REFLECTION POND & SCULPTURE

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio



PRINCIPLE 2_

LANDSCAPE QUALITY

ROOFTOP GARDEN EXTENDS LIVING SPACE FOR ALL

- The roof top garden allows the residents an opportunity to extend their living space, providing opportunities to entertain large groups, take advantage of the views or simply sit in the winter sun.
- A significant portion of the garden is covered to ensure usability throughout the year.
- Protection from morning and afternoon winds is provided.
- A kitchen garden is proposed, with citrus trees and herbs for the use of all residents

- Planting cascades down the facade to the west and south. These planter are located so as to be visible from within the internal corridors on each floor plate, creating an improved outlook from the centralised access way.

Cultivart Landscape Design has been engaged to prepare a landscape concept design for the site.

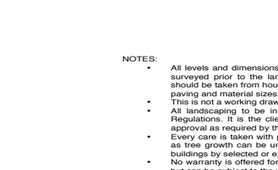
PROPOSED ROOF TOP GARDEN

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

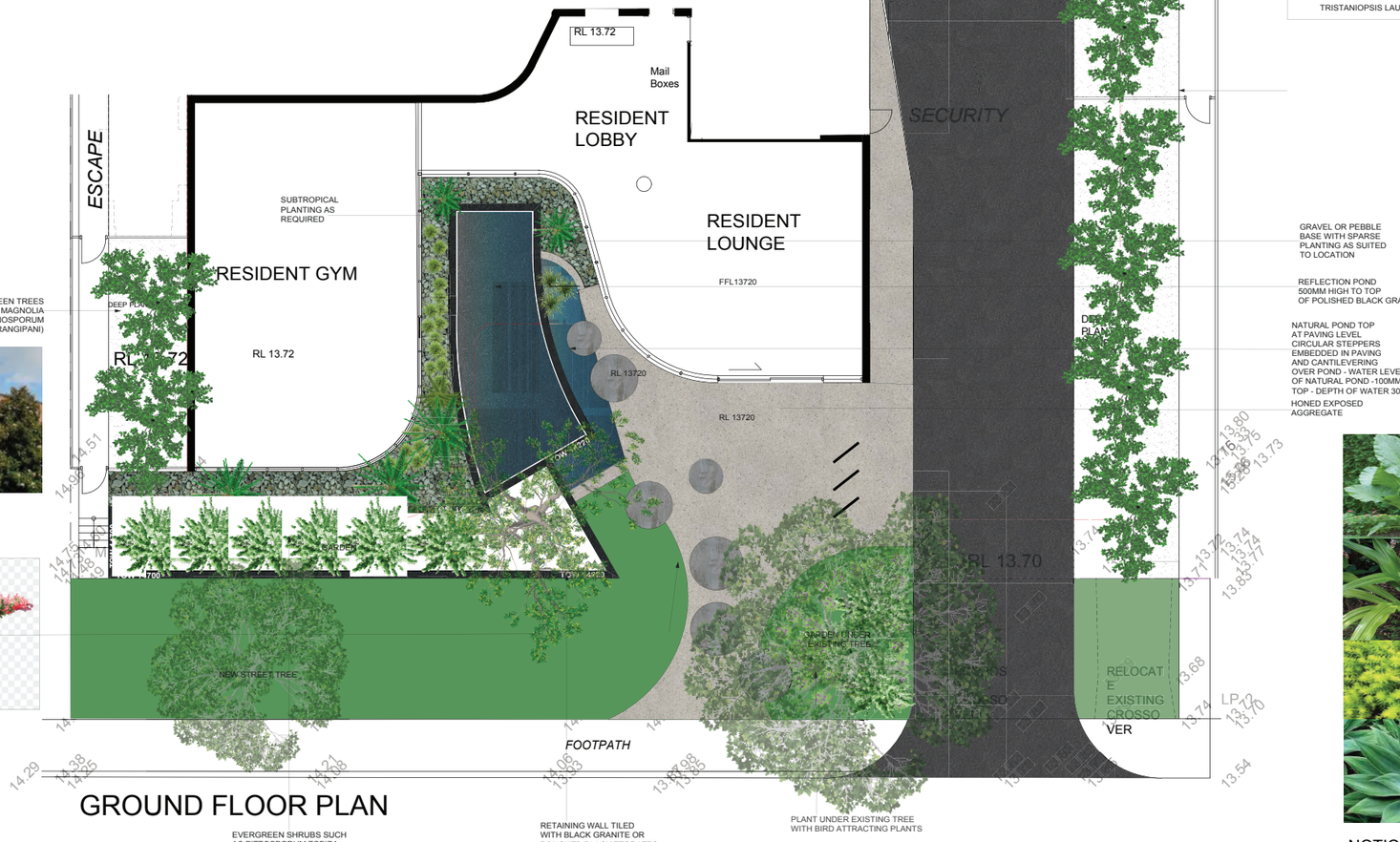
NOTES:

- All levels and dimensions to be checked on site before construction commences. If the property has not been surveyed prior to the landscape design, some dimensions may be inaccurate. All measurements at setout should be taken from house if no survey has been carried out. Some minor adjustments may be required due to paving and material sizes selected.
- This is not a working drawing. Further structural drawings may be required.
- All landscaping to be in accordance with Australian Standards and in compliance with Council and State Regulations. It is the client's responsibility to submit plans (in conjunction with the installing landscaper) for approval as required by the council unless otherwise arranged with CultivArt.
- Every care is taken with plant selection and CultivArt specifies that all trees should be root barriered, however as tree growth can be unpredictable, no warranty is offered for future damage to paving, footings, pools and buildings by selected or existing trees.
- No warranty is offered for the success of specified planting. All plants are selected by a qualified horticulturalist but can be subject to the variables of extreme weather conditions, water deprivation and pests and diseases.

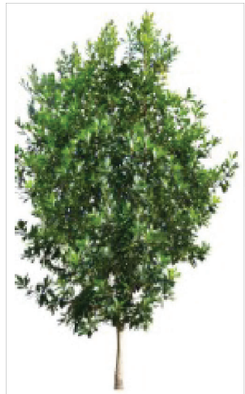


MAGNOLIA LITTLE GEM

CREPE MYRTLE



GROUND FLOOR PLAN



TRISTANIOPSIS LAURINA 'LUSCIOUS'

INDICATIVE EDGE TREATMENT FOR REFLECTION POND

NOTIONAL PLANTING FOR FRONT AROUND POND AND RETAINED GARDEN

NOTIONAL PLANTING FOR UNDER TREE

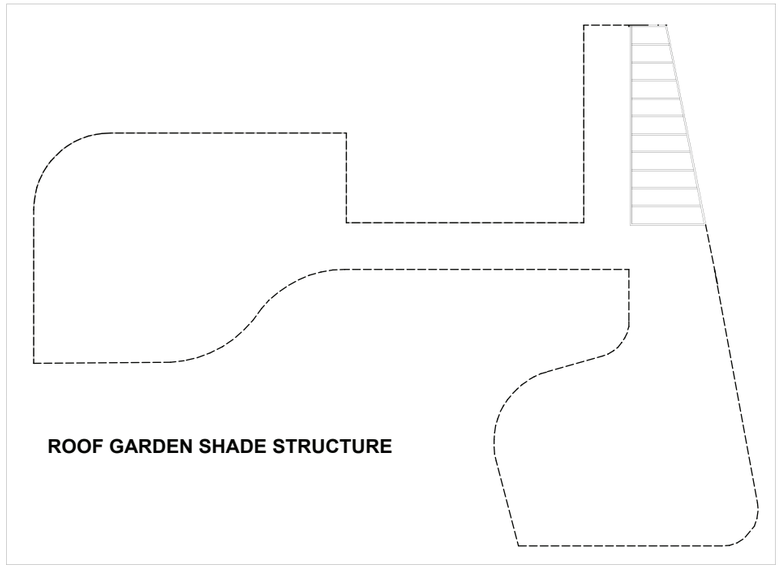
cultivART
Landscape Design
PO Box 365 Karrinyup WA 6921
P 0414 865 747
janine@cultivart.com.au

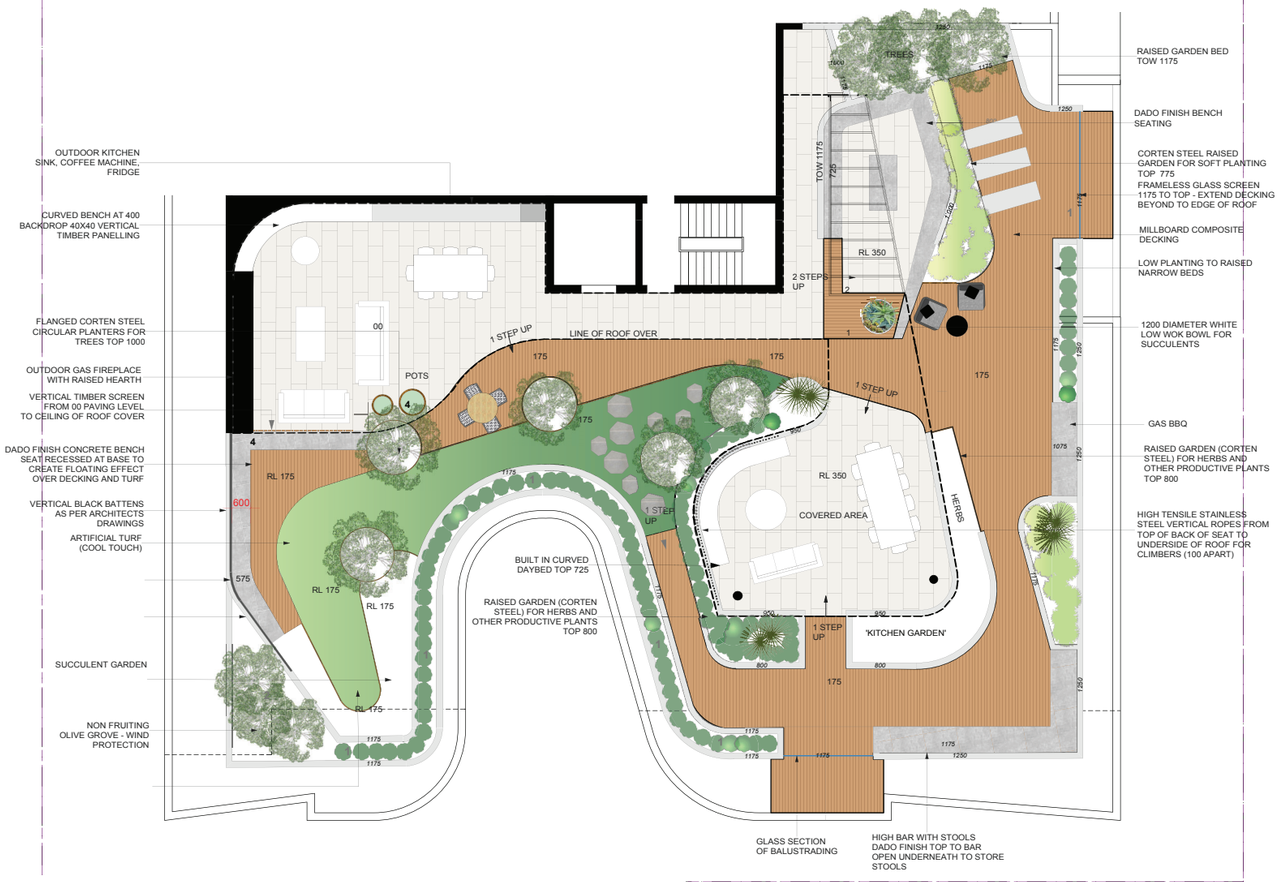
FRONT ENTRY CONCEPT

DEVELOPWISE
SITE: 3-5 WREN STREET
MOUNT PLEASANT

Proj No: C459/01
Dwg Date:NOVEMBER 2ND 2018
Revisions NOVEMBER 22ND 2018
Dwg Scale: 1:100 (A1)
Drawn: Janine Mendel

C459/02





KITCHEN GARDEN:
PERENNIAL HERBS SUCH AS
ROSEMARY, SAGE, CHIVES,
THYME, CURRY TREE, POMEGRANATE

CITRUS GROVE PLANTING:
LEMON, LIME, MANDARIN
WITH UNDERPLANTING IN
GARDEN SURROUNDING IT

SUCCULENT GARDEN
SUCCULENTS SUITABLE
FOR LOW DEPTH SOIL

CLIMBING WALL BEHIND COVERED
AREA - NOTIONAL

SUCCULENT BOWL

POSSIBLE CONTAINER TREES FOR ROOF GARDEN PLEASE NOTE TREES WILL NOT GROW AS BIG IN CONTAINERS

NOTIONAL PLANTING

CASUARINA 'COUSIN IT'
PLANTING FOR GREEN BALUSTRADE

NOTES:

- All levels and dimensions to be checked on site before construction commences. If the property has not been surveyed prior to the landscape design, some dimensions may be inaccurate. All measurements at setout should be taken from house if no survey has been carried out. Some minor adjustments may be required due to paving and material sizes selected.
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- Every care is taken with plant selection and CultivArt specifies that all trees should be root barriered, however as tree growth can be unpredictable, no warranty is offered for future damage to paving, footings, pools and buildings by selected or existing trees.
- No warranty is offered for the success of specified planting. All plants are selected by a qualified horticulturalist but can be subject to the variables of extreme weather conditions, water deprivation and pests and diseases.

CONDITIONS:

- CultivArt Landscape Design owns the copyright of this design, which includes photographs of the garden illustrating the design and plant selection. No part of the plan may be reproduced without permission and photographs used by tradesmen, suppliers, landscaping installers and journalists for promotion or any other commercial purpose must credit CultivArt Landscape Design as the designer of the garden. Failure to do so will be considered a breach of copyright and further action will be taken.

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ROOF GARDEN CONCEPT

DEVELOPWISE
SITE: 3-5 WREN STREET
MOUNT PLEASANT

Proj No: C459/01
Dwg Date:NOVEMBER 2ND 2018
Revisions NOVEMBER 28th 2018
Dwg Scale: 1:100 (A1)
Drawn: Janine Mendel

C459/01

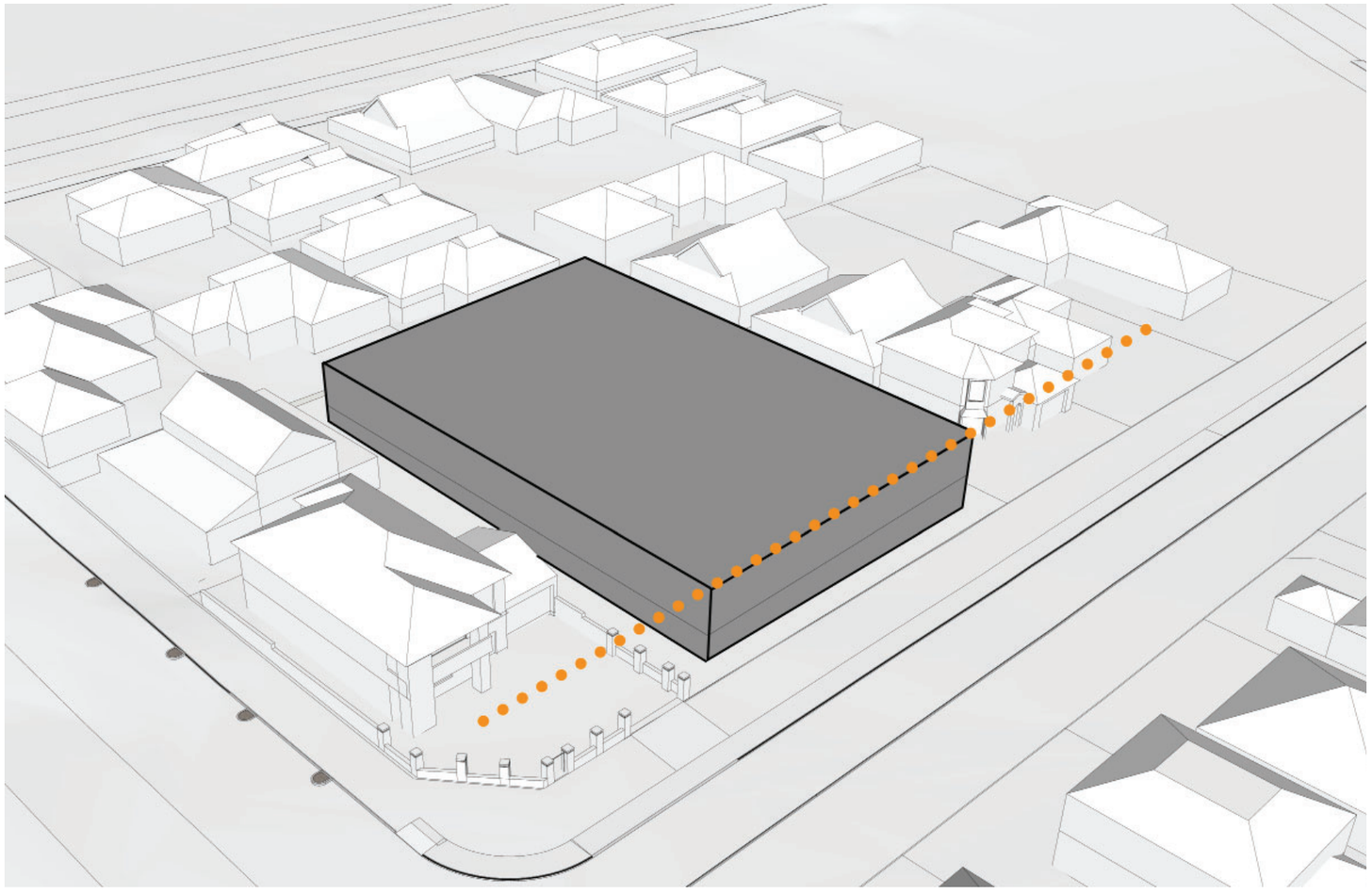
PRINCIPLE 3_

BUILT FORM & SCALE

The guiding principles behind the proposed design are to maximise the amenity within the apartments, whilst sensitively responding to the existing site context.

The following diagrams form a step by step sequence, illustrating how these key strategies inform the proposal.

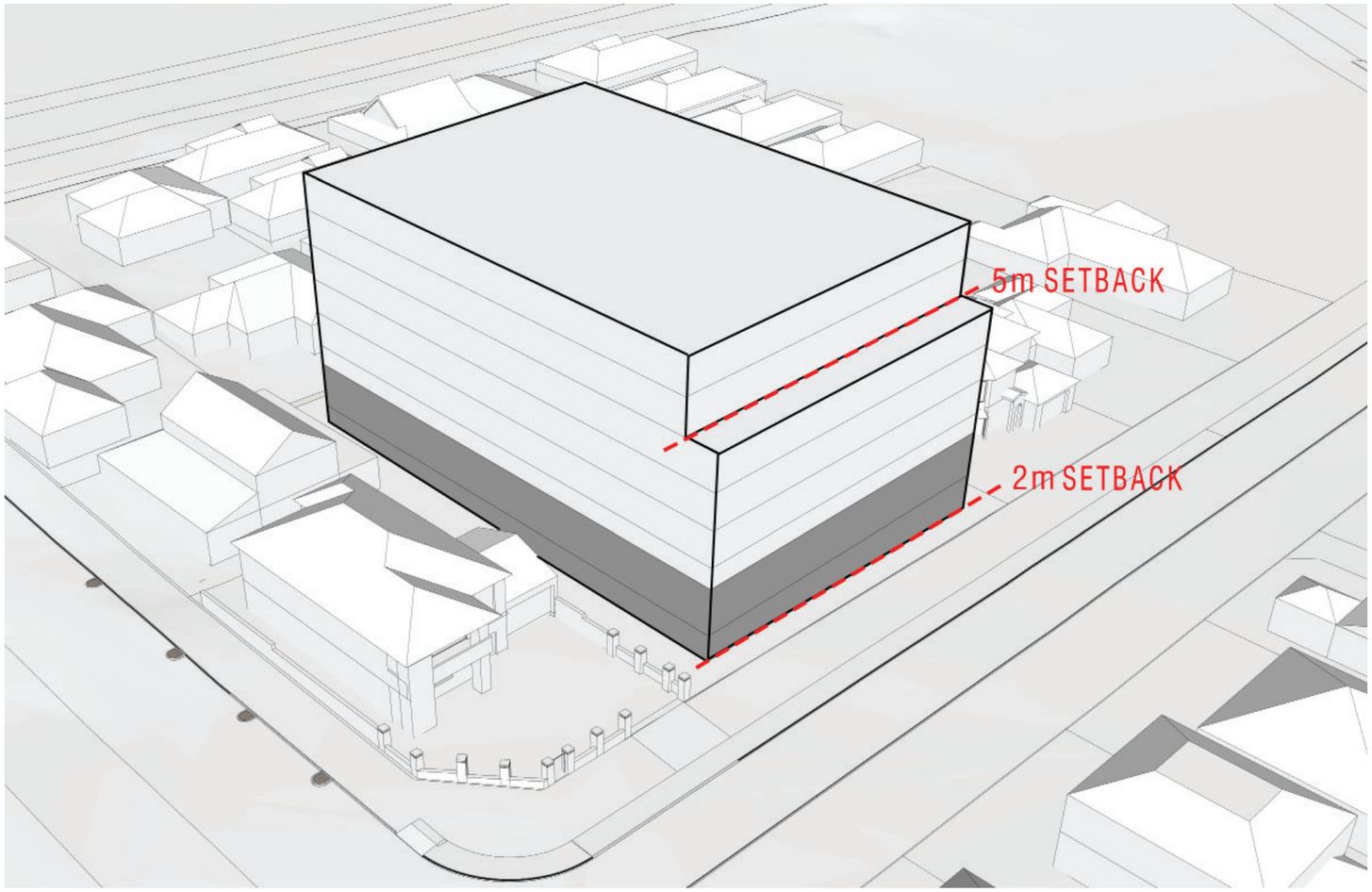
EXISTING SITE CONTEXT



2 STOREY DATUM RELATES TO EXISTING CONTEXT

PRINCIPLE 3_

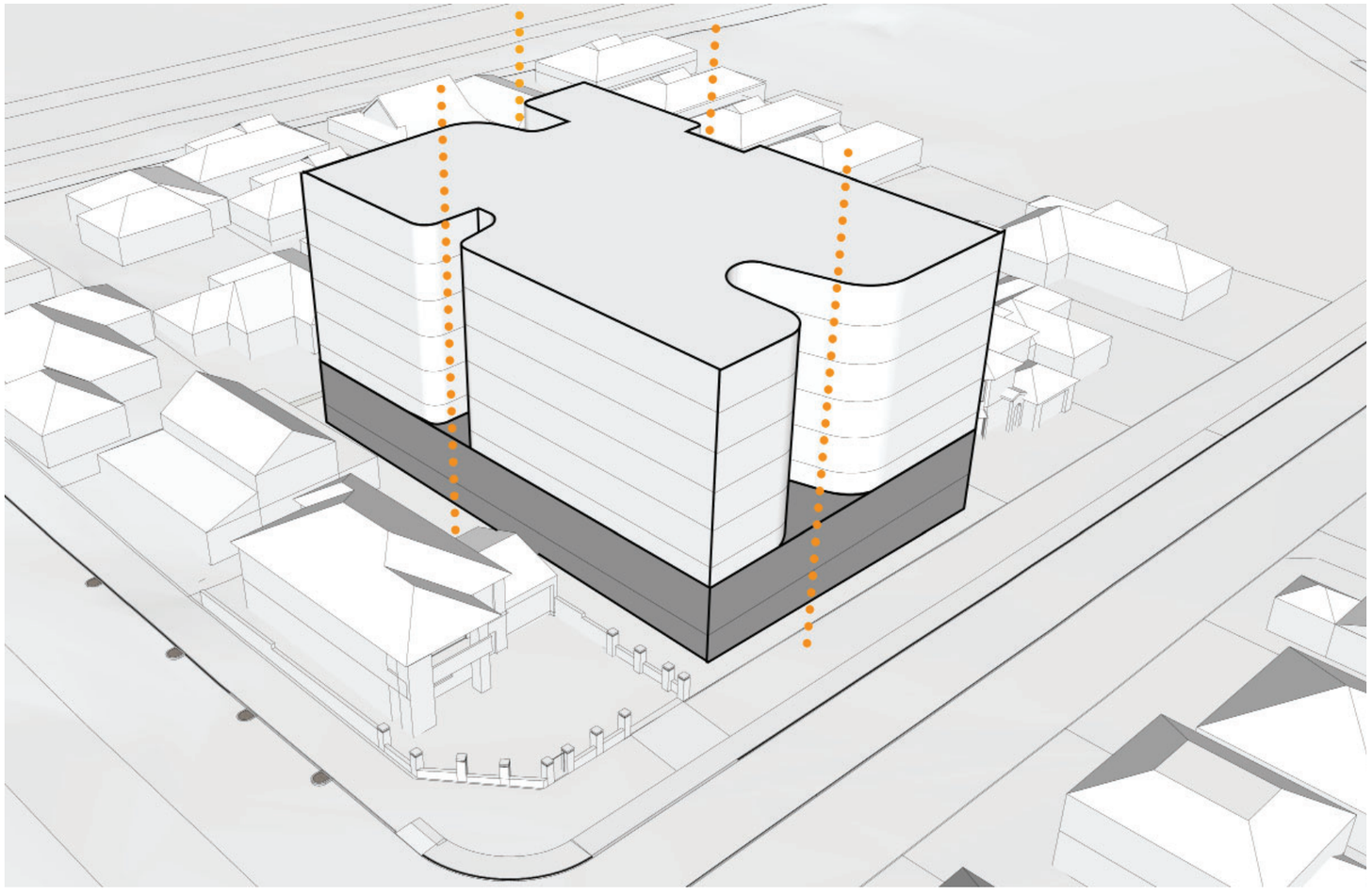
BUILT FORM & SCALE



PERMITTED ENVELOPE

PRINCIPLE 3_

BUILT FORM & SCALE

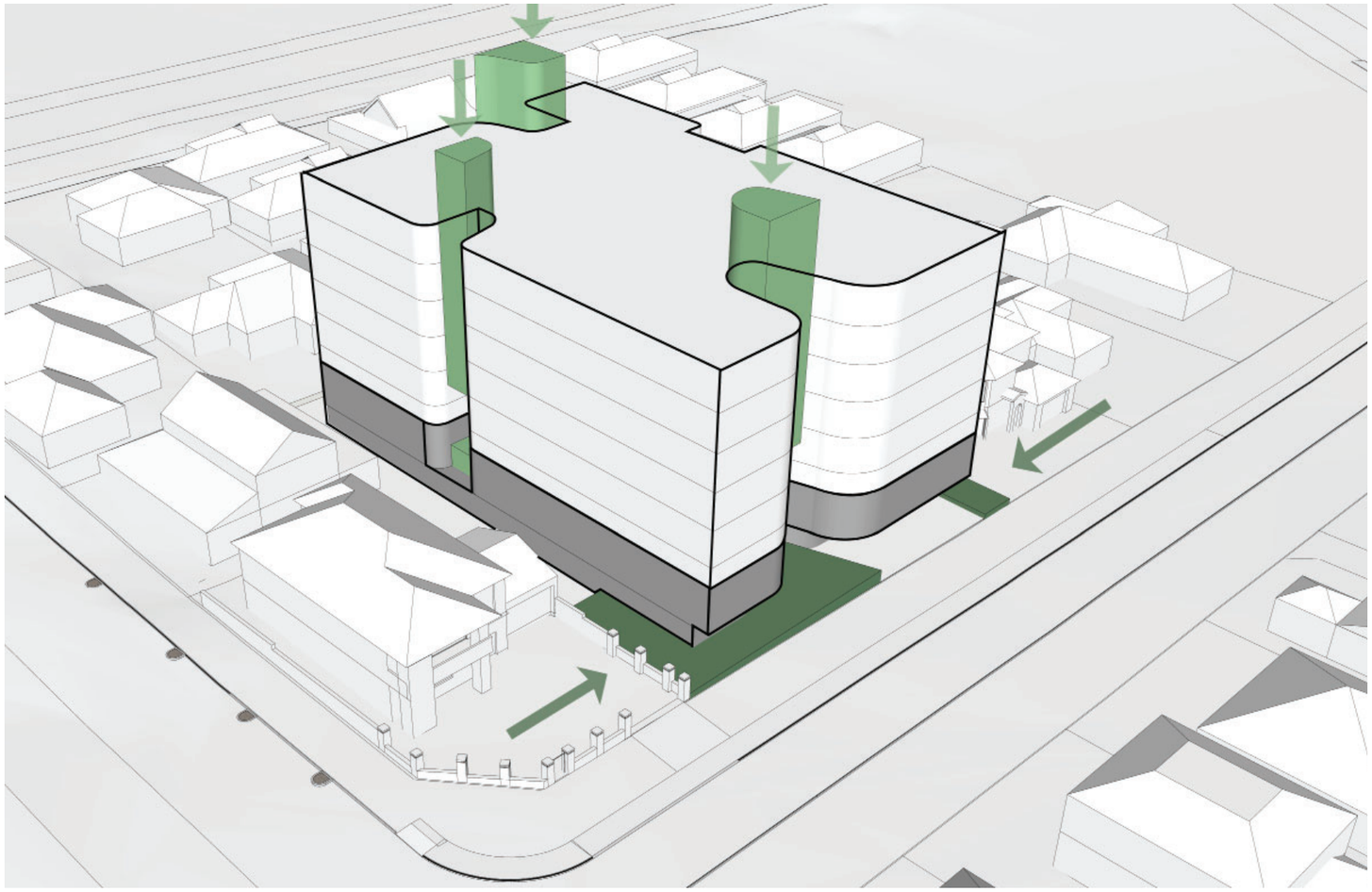


SCULPTURAL VOIDS CARVE AWAY MASS

EMPHASISING VERTICAL ELEMENTS TO ENGAGE WITH FUTURE CONTEXT

PRINCIPLE 3_

BUILT FORM & SCALE

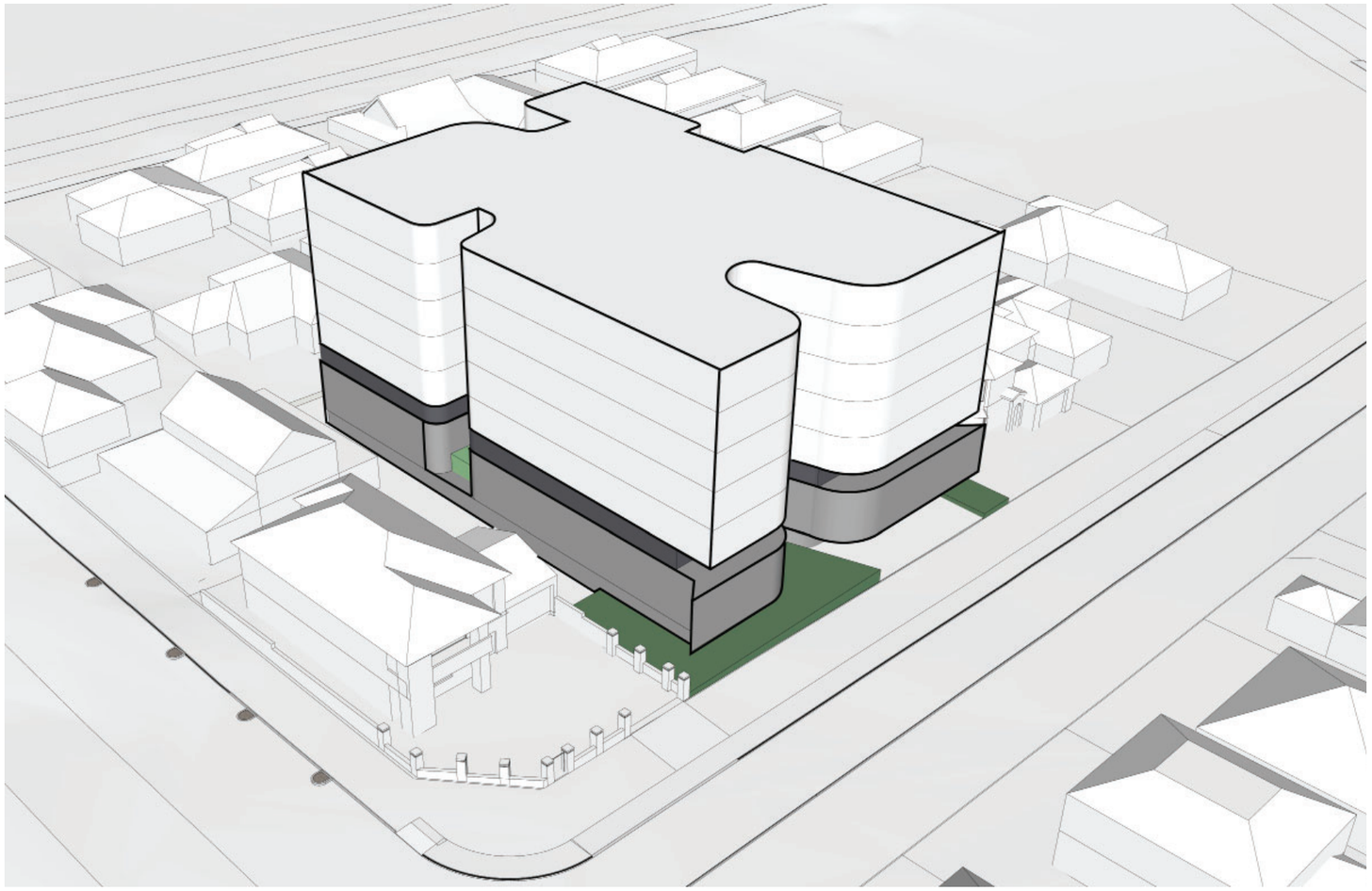


CONTINUE SUBURBAN LANGUAGE THROUGH LANDSCAPED ‘FRONT YARD’

INSERT LANDSCAPING WITHIN VOIDS

PRINCIPLE 3_

BUILT FORM & SCALE



SEPARATE SCULPTURAL ELEMENTS

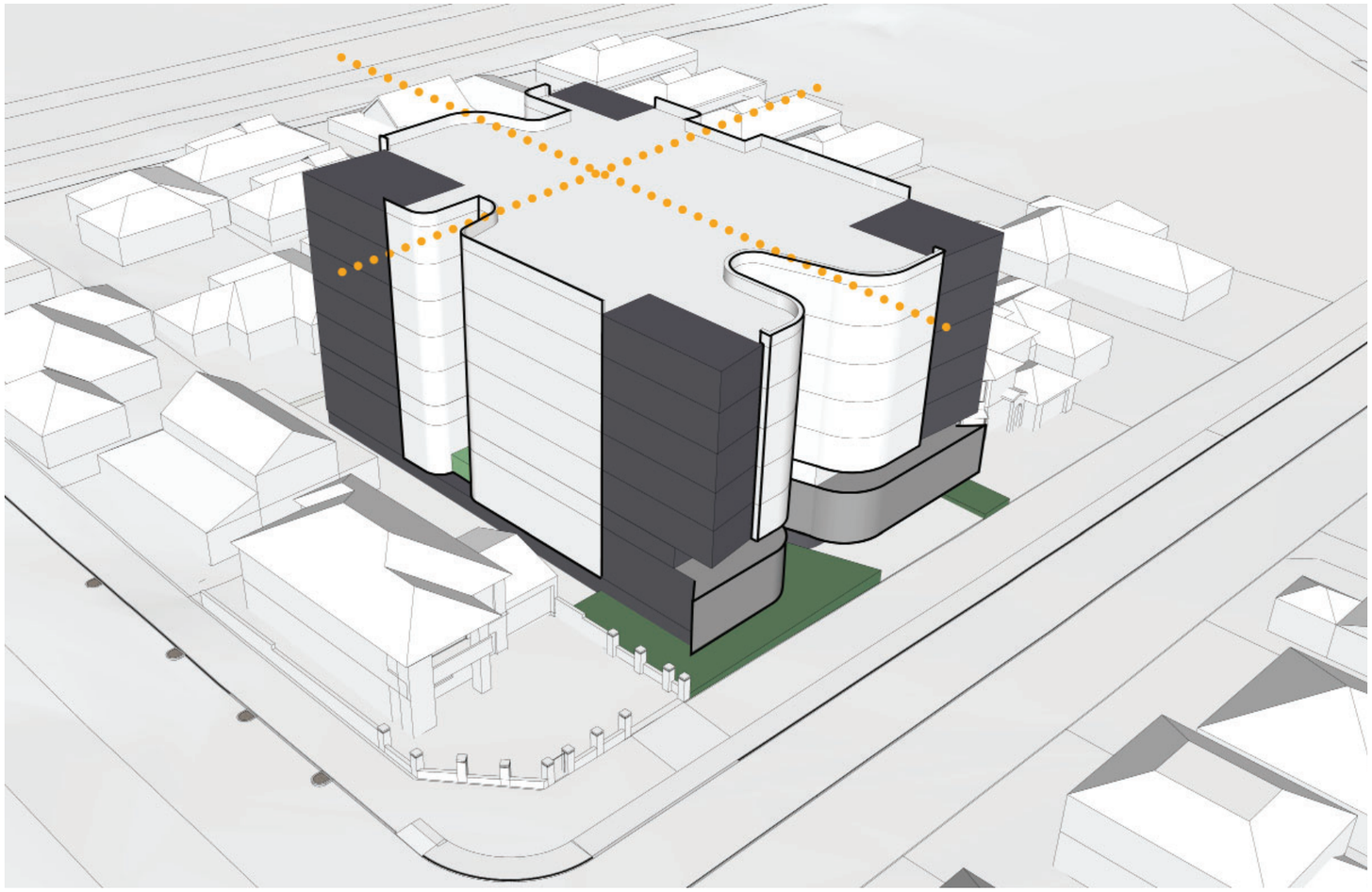
WITH RECESSED WAIST BAND

PRINCIPLE 3_

BUILT FORM & SCALE

DISSOLVE CORNERS THROUGH SHADOW

CREATING A CRUCIFORM



PRINCIPLE 3_

BUILT FORM & SCALE

INSERT FINE GRAIN ARTICULATION

MATERIAL VARIATION TO SOFTEN FACADE & CREATE HUMAN SCALE WITHIN BUILT FORM

PROPOSED WREN STREET VIEW

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

NORTH (CANNING HIGHWAY) FACADE

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

EAST FACADE

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

WEST FACADE

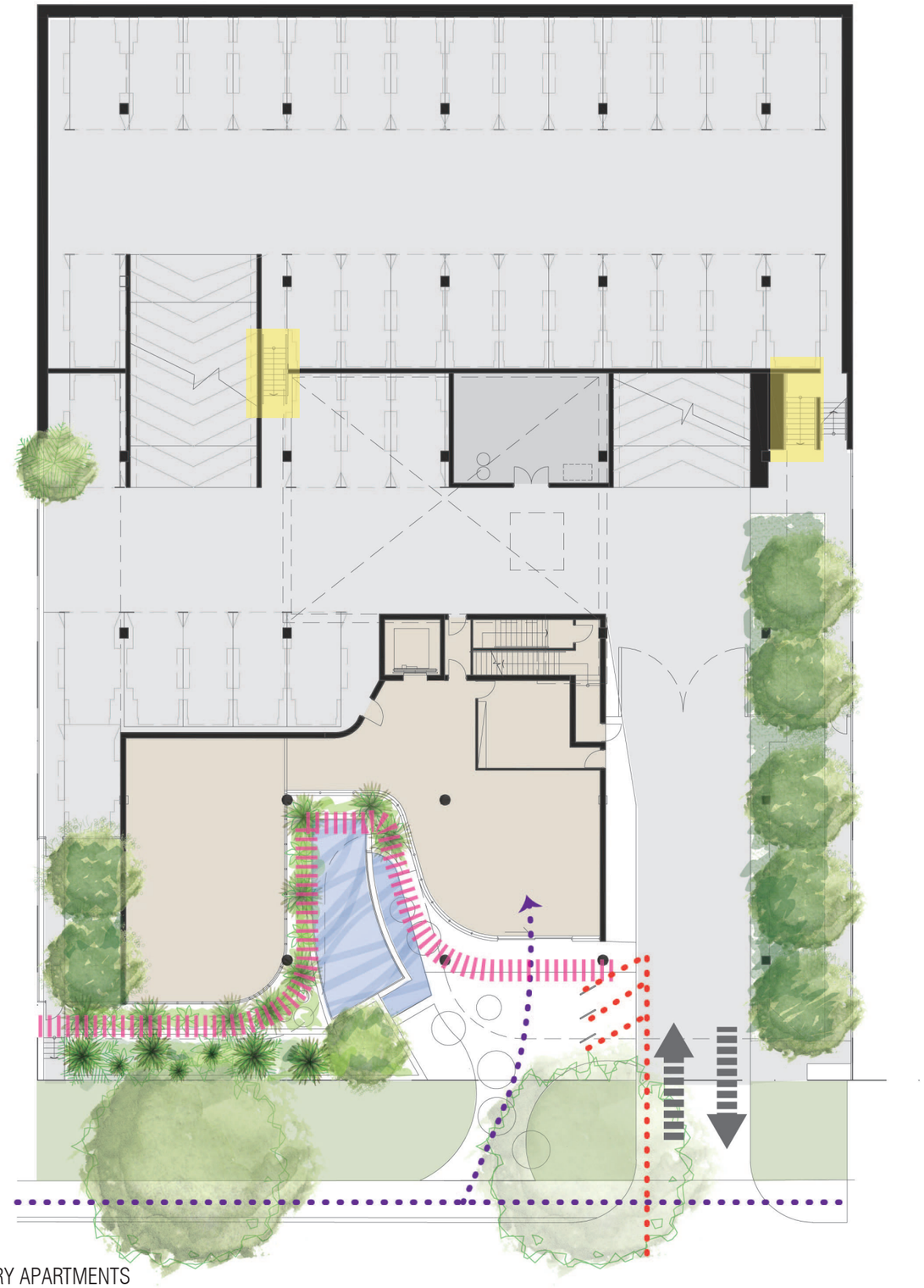
PRINCIPLE 4_

FUNCTIONALITY & BUILD QUALITY

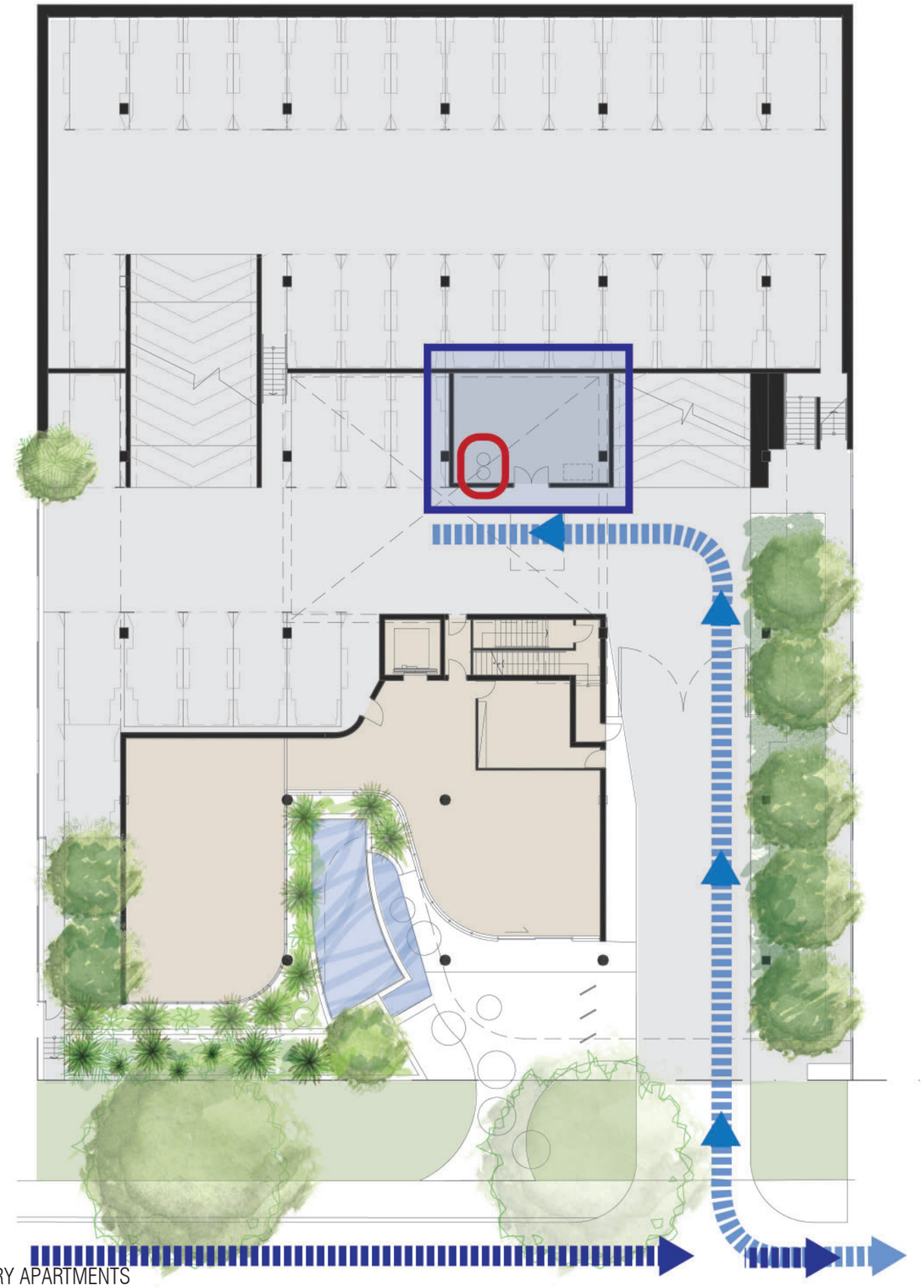
GROUND FLOOR LAYOUT BALANCES USER REQUIREMENTS

- The streetscape frontage is extended through the articulated facade.
- Glazing activates the street, while landscaping assists in managing the fall across the site and dissolving views to the residents' gym.
- Pedestrian access from the existing footpath is clearly legible with paving proposed within the verge.
- Visitor bike bays are integrated within the entry plaza.
- The driveway is proposed to be a similar finish to the entry plaza to maintain the high quality entry sequence, however in a darker tone to differentiate it from the pedestrian zones.

- To maximise residents safety when navigating between the split level car park handrails are proposed to both sides of the access stairs. Additional lighting will be installed in these areas for added safety when ascending and descending the stairs.



PEDESTRIANS
BIKES
VEHICLES
ACCESS BETWEEN SPLIT LEVELS



BIN CHUTES

BIN STORE ROOM

CURRENT WASTE TRUCK MOVEMENT

FUTURE WASTE TRUCK MOVEMENT

PRINCIPLE 4_

FUNCTIONALITY & BUILD QUALITY

SITE SERVICING REQUIREMENTS

- Waste is proposed to be collected from within the complex upon the acquisition by the City of the relevant truck, as further detailed in the Waste Management Plan provided as part of this application. The truck will reverse in and exit in forward gear
- In the interim receptacles will be wheel out to the street and collected by the City from the street.
- The Bin store room is not visible from the street.
- 2 bin chutes, one for general waste and one for recycling are accessible from residential levels.

- See Waste Management Plan prepared by Move Consultants

PRINCIPLE 4_

FUNCTIONALITY & BUILD QUALITY

PROPOSED MATERIAL PALETTE

- Materiality and the use of colour is integral to the overall built from
- A palette of white, charcoal and cascading landscaping is integrated with composite timber cladding within the sculptural voids.
- Additional warmth, tactile materials and glazing is integrated at the lower levels to enhance the pedestrian experience
- Materiality extends to the ground floor surface, with floor treatments considered to ensure a quality, practical finish.
- The maintenance of structured landscaping throughout the building has been considered.

PRINCIPLE 5_

SUSTAINABILITY

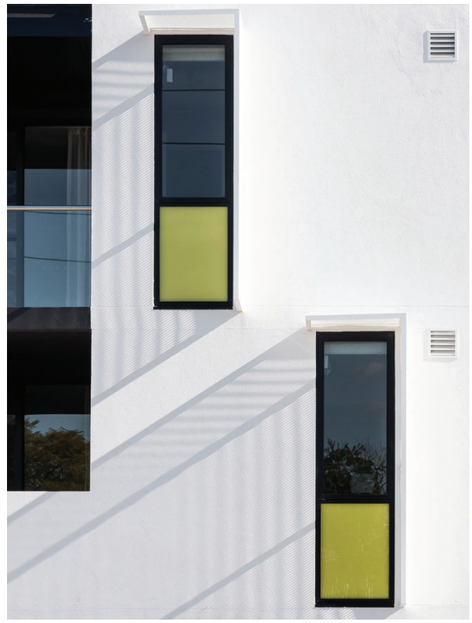
SUSTAINABLE DESIGN FOR INCREASED APARTMENT AMENITY

- Sustainability is integrated into the first principles of design, maximising access to light & air to reduce overall energy use.
- Wide frontages ensure passive ventilation & natural lighting to all habitable spaces.
- Internal corridors are naturally lit with a landscape outlook, providing the ability to naturally ventilate the communal access ways.
- Bin chutes are centrally located for easy access from all apartments. A separate refuse and recycling chute encourages recycling.
- Sun shades are proposed to the east and west facades to mitigate solar heat gain and provide a sense of separation and privacy from residential neighbours.

BIN CHUTES

PRINCIPLE 5_

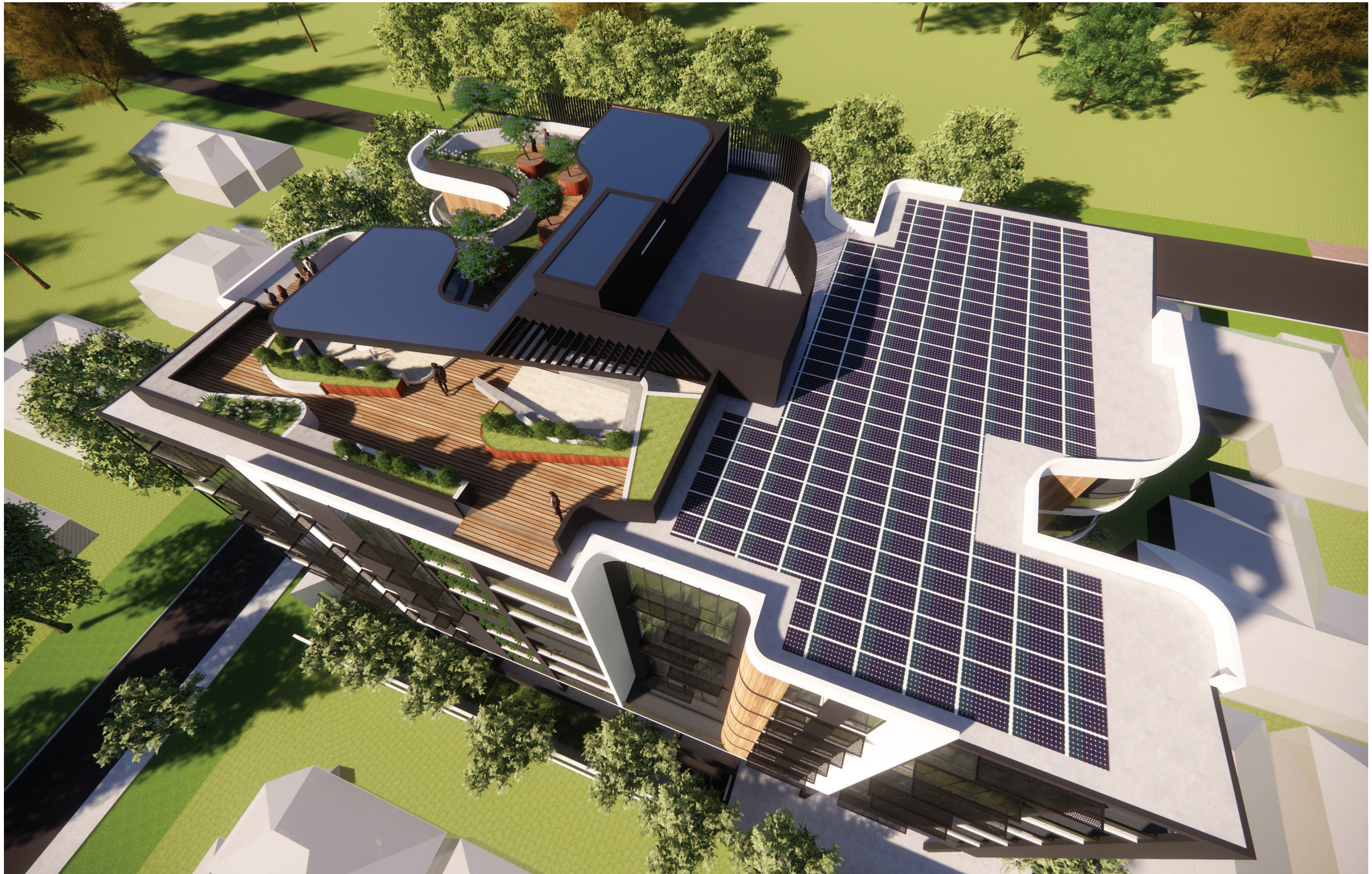
SUSTAINABILITY



ACTIVATED ROOF TERRACE

- The roof top garden provides residents with south facing apartments access to north sun throughout the year in a landscaped setting.
- The remainder of the roof is given over to accommodating a solar PV array.

The Proposal will achieve a 4 star green star rating as required by the CBACP. A preliminary report has been prepared by Sustainability WA and is included as part of the Development Application submission.



SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

PRINCIPLE 6_

AMENITY

APARTMENT CATER FOR RESIDENTS CHANGING NEEDS

- Larger apartments are provided with generous bathrooms to cater for residents changing needs
- Large terraces open directly from indoor living areas
- Full height glazing creates light filled interiors
- Large openings facilitate passive ventilation
- No cross views between apartments
- As it is understood that a many future residents will be locals downsizing from single storey residents with large gardens, a numbers of apartments have integrated landscape planters to facilitate this change in lifestyle.
- Communal facilities provide areas for larger gatherings
- Additional residential facilitates include an residential lounge to the ground floor and gym

A variety of 1, 2 3 and 4 bed apartments are provided as outlined below:

1 BED APTS: 26%
2 BED APTS: 27%
3 BED APTS: 13%
4 BED APTS: 34%

PRINCIPLE 7_

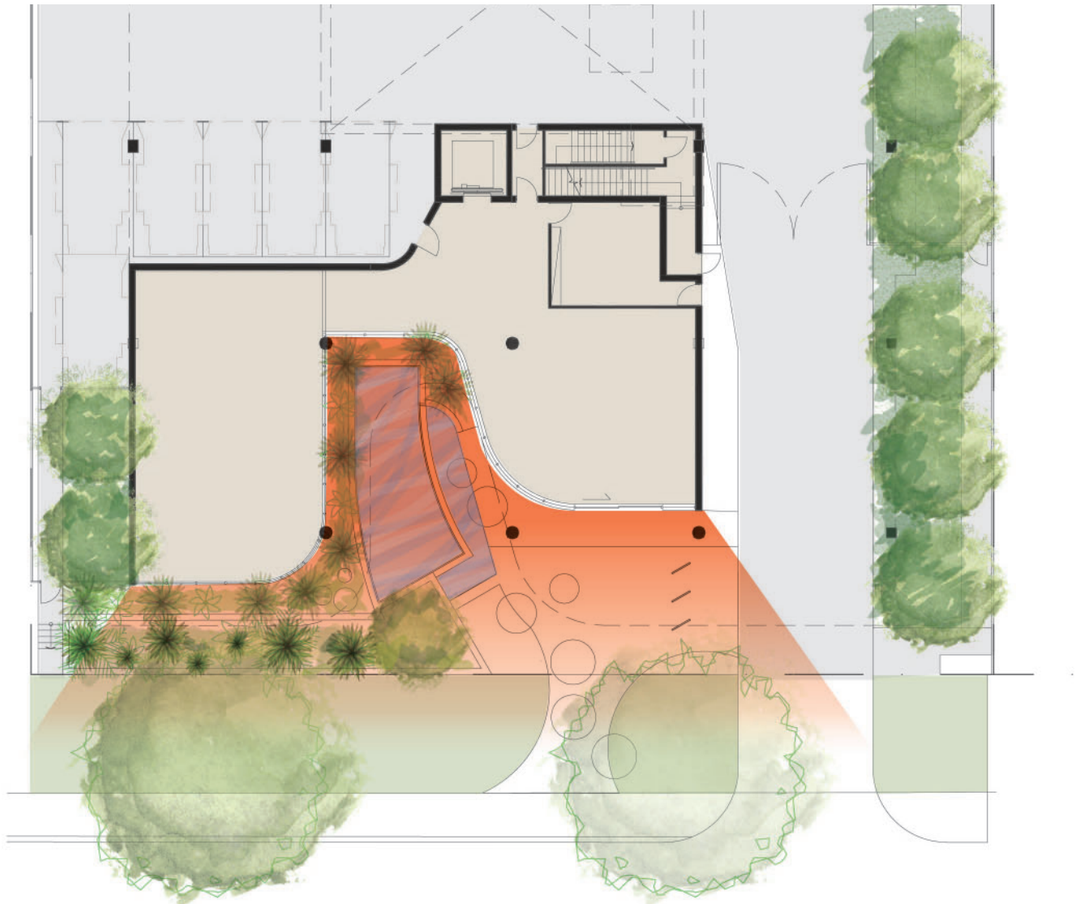
LEGIBILITY

- The landscaping proposal for the ground floor works with levels, planting and materiality to differentiate between active zones and areas which call for greater privacy.
- The vehicle entry way is clearly delineated from the pedestrian zone through colour variation.
- The overall built form works with a strong horizontal podium datum to relate to the context of the existing streetscape, while the verticality of the white sculptural form over relates to the future built context.

VIEW ALONG WREN STREET

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

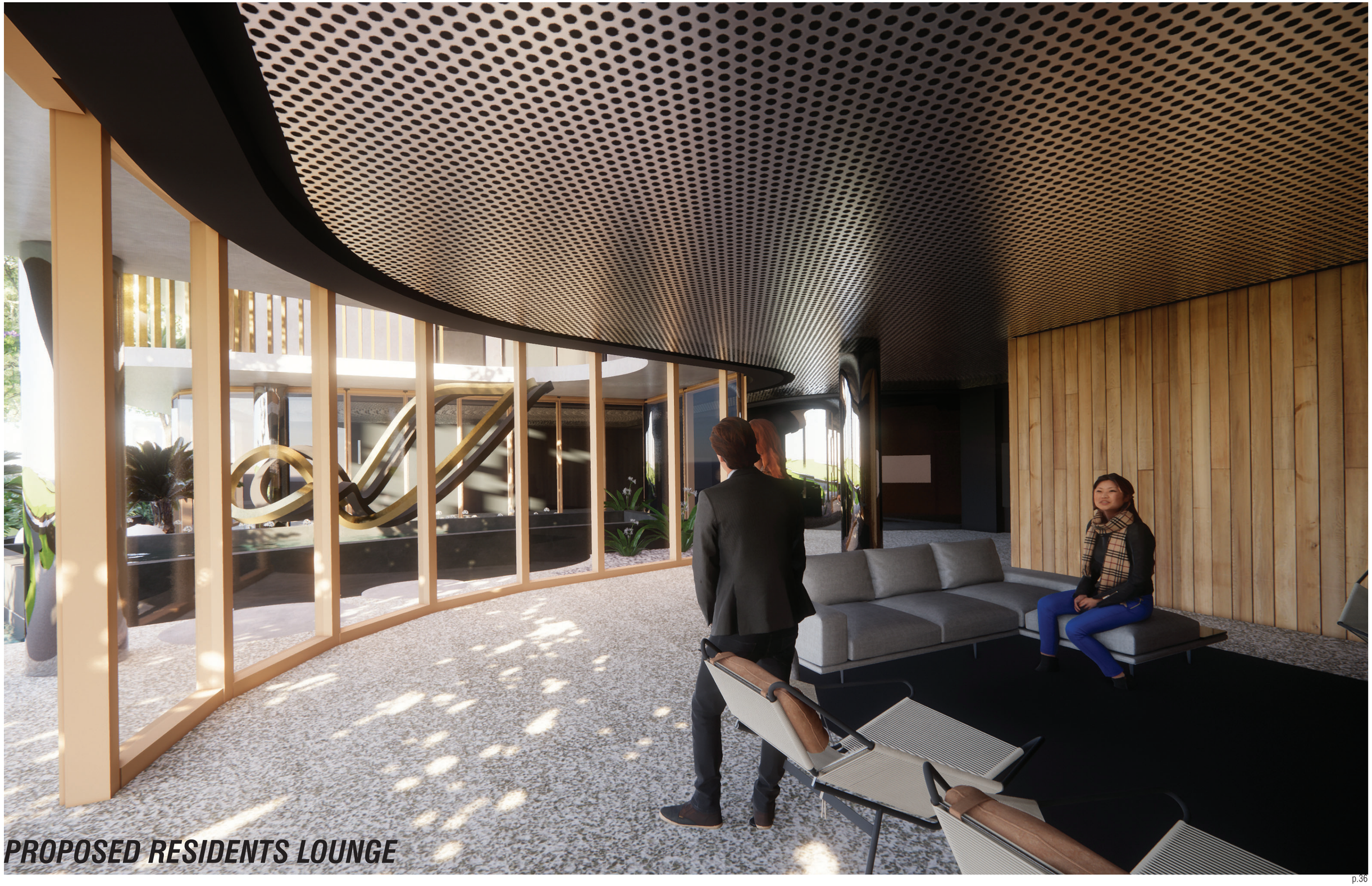
MJA studio



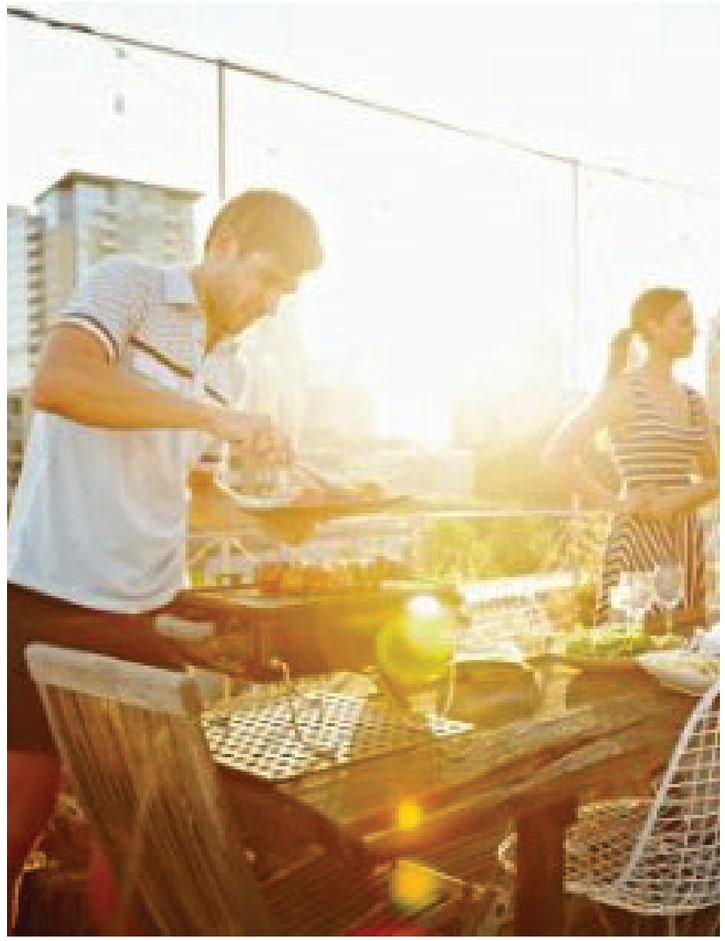
PRINCIPLE 8_

SAFETY

- The sculptural facade extends the street frontage, increasing opportunities for passive surveillance of the public domain.
- Semi active zones to the ground floor create activation
- Lighting will be integrated within the front landscape zone and reflection pond
- The design eliminates potential entrapment spaces
- Graffiti resistant surfaces will be installed where required



PROPOSED RESIDENTS LOUNGE



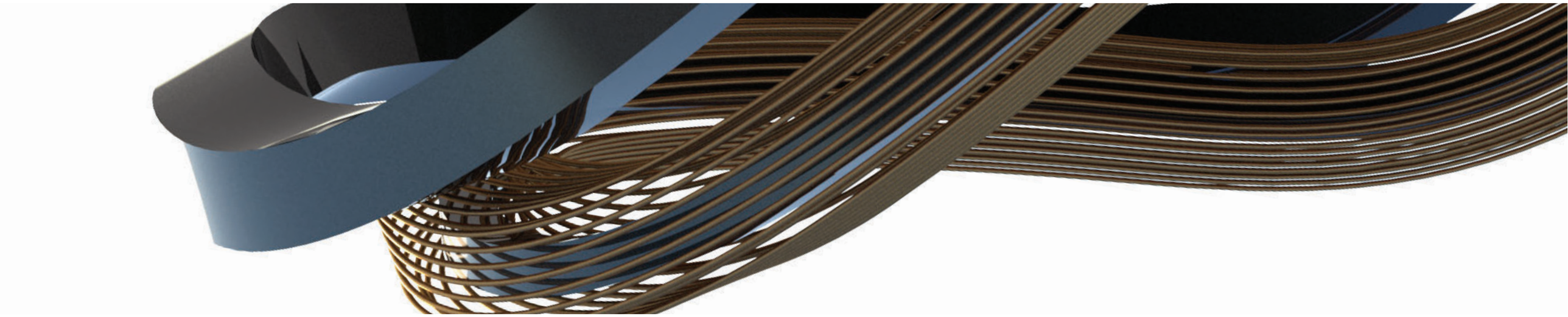
PRINCIPLE 9_

COMMUNITY

- A mix of residential communal areas promotes a sense of community within the complex, providing incidental interactions as desired
- A focus of the development has been the provision of communal landscape areas to cater for those residents downsizing from a large residences with mature gardens
- A high quality ground floor plane improves the streetscape and gives back to the community
- An additional verge tree is proposed

A sculpture to the ground floor is proposed for the public art contribution required under the CBACP. Artist Stuart Green has been commissioned for this piece, the preliminary concept package is contained within the following pages:

Public Artwork Concept Design



flight over water

Proposal Nov 2018

prepared by Big Spoon Art Services

STUARTGREEN artist
big spoon art services

artworks - Stuart Green

Stuart Green - Lead artist
(Director Big Spoon Art Services)

With over twenty five years' experience creating artworks for the public realm Stuart Green has created an enviable portfolio of artworks in a range of scales and themes. Based in Perth he has completed works in his home town as well as nationally and internationally. Stuart Green and Big Spoon Art Services were recently selected for the internationally competitive Al Zubara artscape project in Qatar.

His portfolio includes architectural facade treatments, monumental stand-alone artworks and smaller scale intimate interpretive pieces.

Stuart Green has a keen interest in the phenomena of the natural world and often these images and ideas generate the forms and visual structures manifest in his artwork. He has a keen interest in pattern and form, and his work often follows three threads; *line*, *object* and *field*.

Ben Price- Designer - Project development
(Studio - Big Spoon Art Services)

Ben and Stuart have collaborated on many projects over the years. Ben is a integral element in the success of the studio, working full time to assisted in the design and delivery of many major projects produced in the studio. Ben has 15 years of experience working across the fields of Architecture, Landscape and Public Artwork and contributes this knowledge to Stuart's Artist practice.

The Studio

Big Spoon Art Services has a large production facility and full time staff able to realise the production and delivery of large and small scale public artworks and integrated services

Big Spoon Art Services
A: 27 May Holman Drive, Bassendean
M: 0407 705 692
E: stuart@stuartgreen.com.au

Flight over water

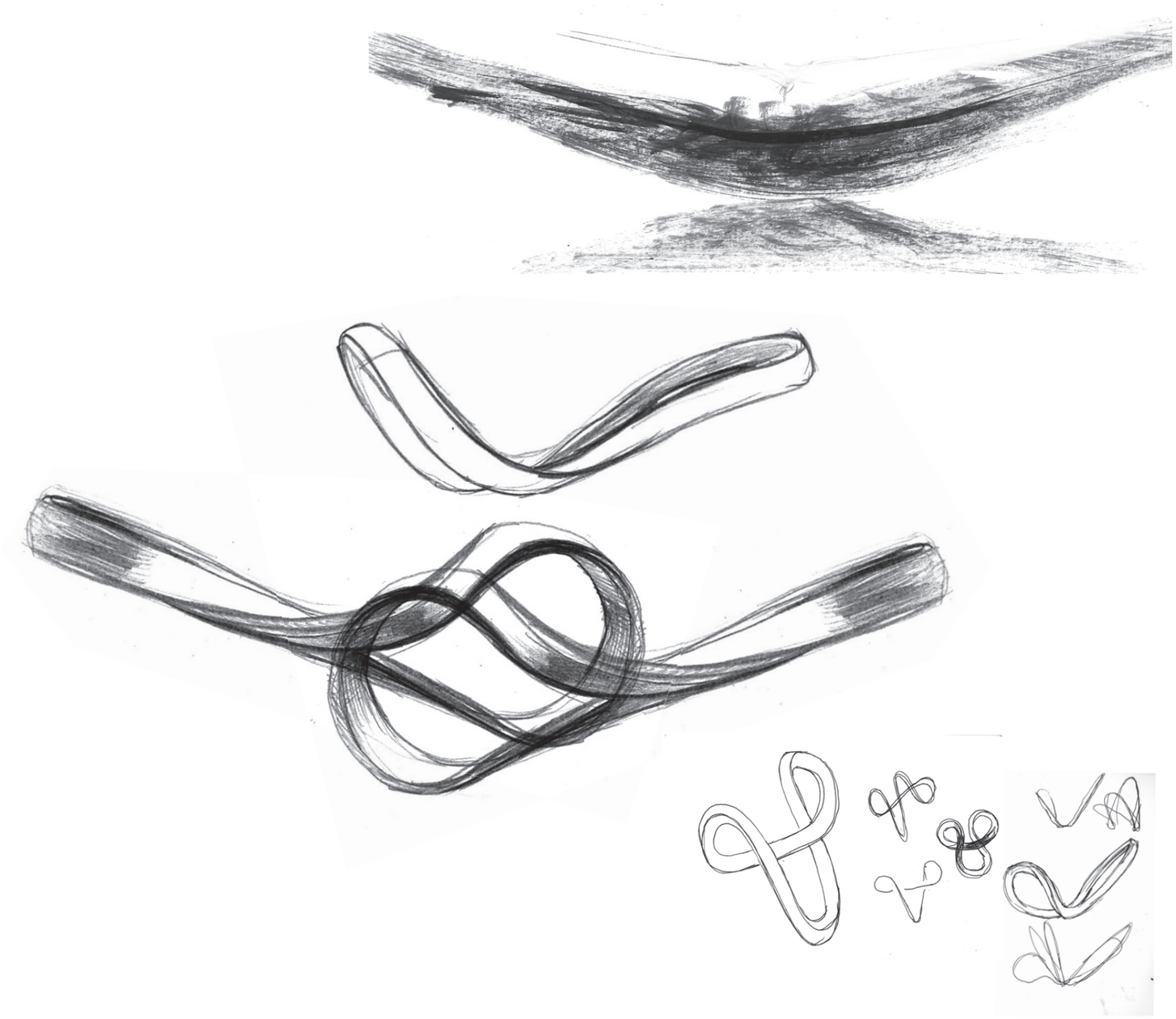
The work proposed here centers on the availability and the centrality of the reflection pond, which acts to calm the visitor and resident alike. The entry pond provides a focus point on entry and a meditative oasis-like center for the development.

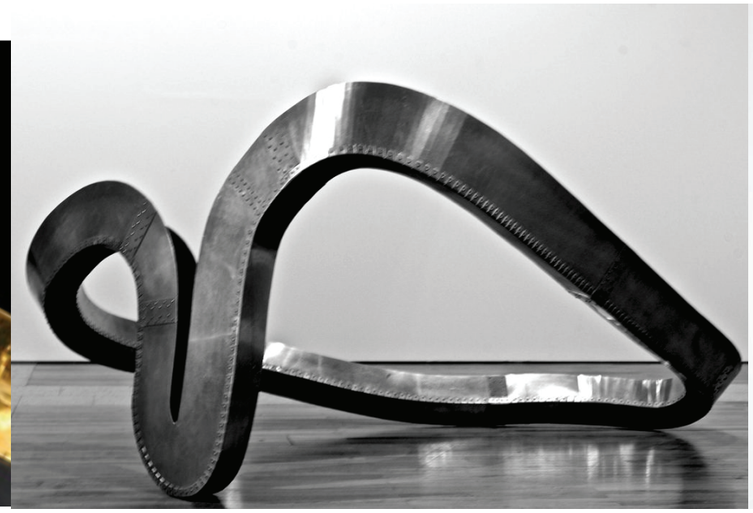
Calm still water has a timeless quality and the proposed sculpture plays with this sense of stillness by both reinforcing and contrasting this with counterbalanced form. The sculpture cantilevers over the pond in an abstract gesture of sinuous flight which alludes to the looping travel of water birds, dropping and rising again in their searches along the river.

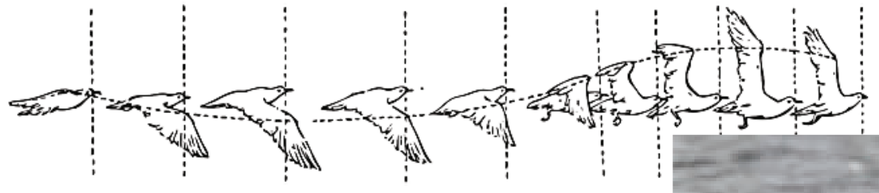
The sculpture itself is a pair of entwined loops that both wrap through each other but also envelop and hold a good deal of airspace. The work becomes a passage for the visual travel through the air, with the eye following the lines of the work as they duck and twist in arabesque flight.

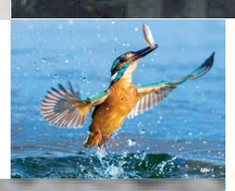
The work is also very much about materials and the quality of the surfaces and their ability to reflect the available light and the water. Each material choice is about the capture, holding and transmission of light to give a rich and lustrous sense of luxury. High gloss black combined with rich gold allows the work to manipulate Light in its full spectrum. The work sits in the cool of the shadows of the development, and is intended to give a layered depth and richness to these darker recesses of the sanctuary-like environment. It is also about the gleaming highlight of gold, flashing against the shadows - like the ripple of light left on the water late in the day, as an unseen bird makes off with one last snatched fish.

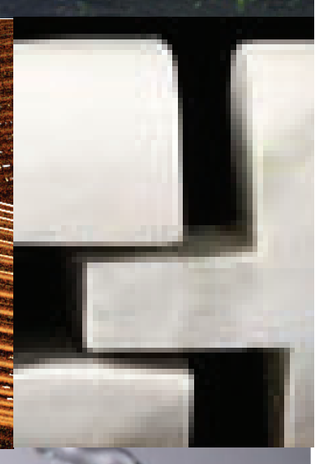
At night the work is further enlivened as up-lights on the pond floor trace out the line of the work, adding additional light animation as the water surface ripples and undulates, in turn bending and moving the projected light with the quality of the water surface.

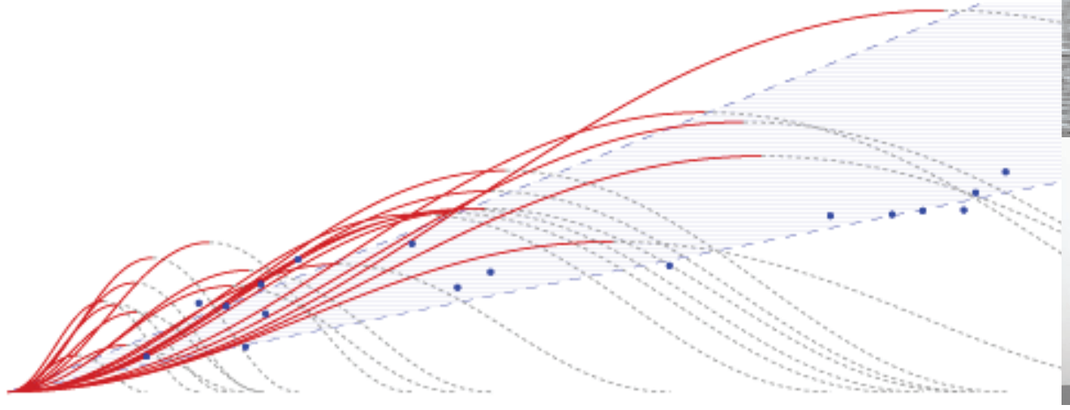


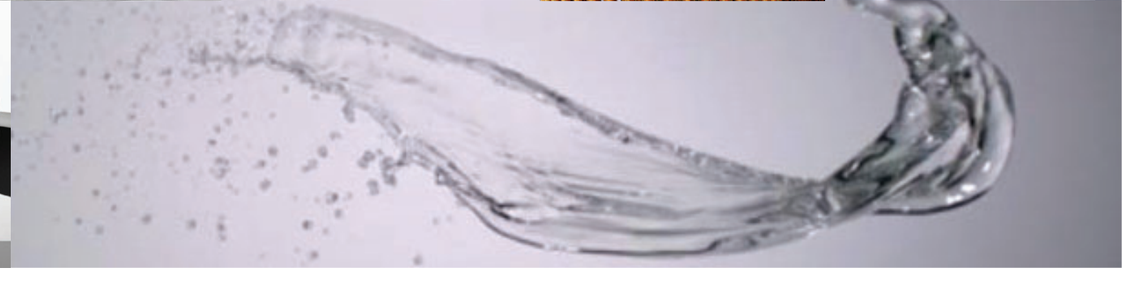


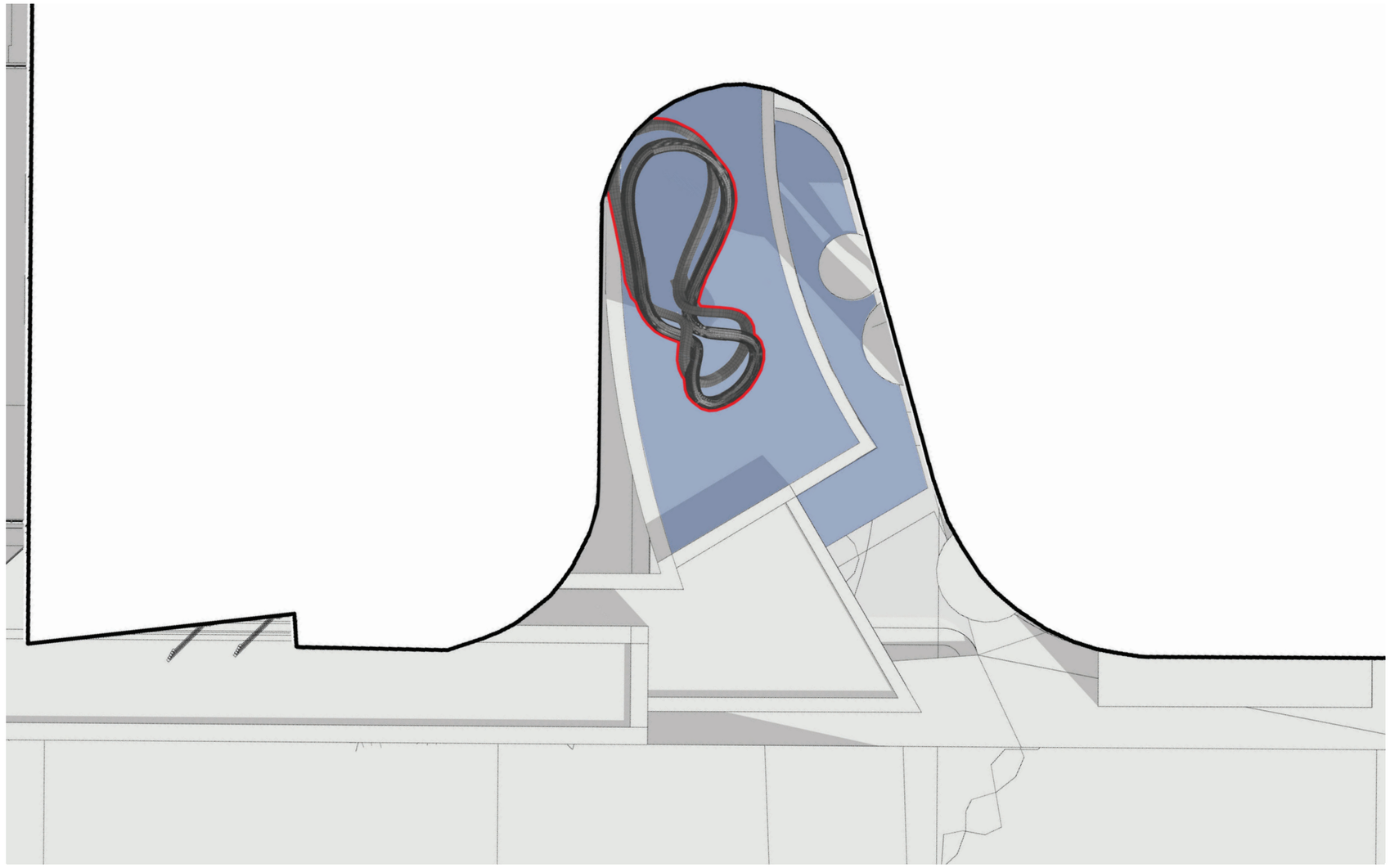




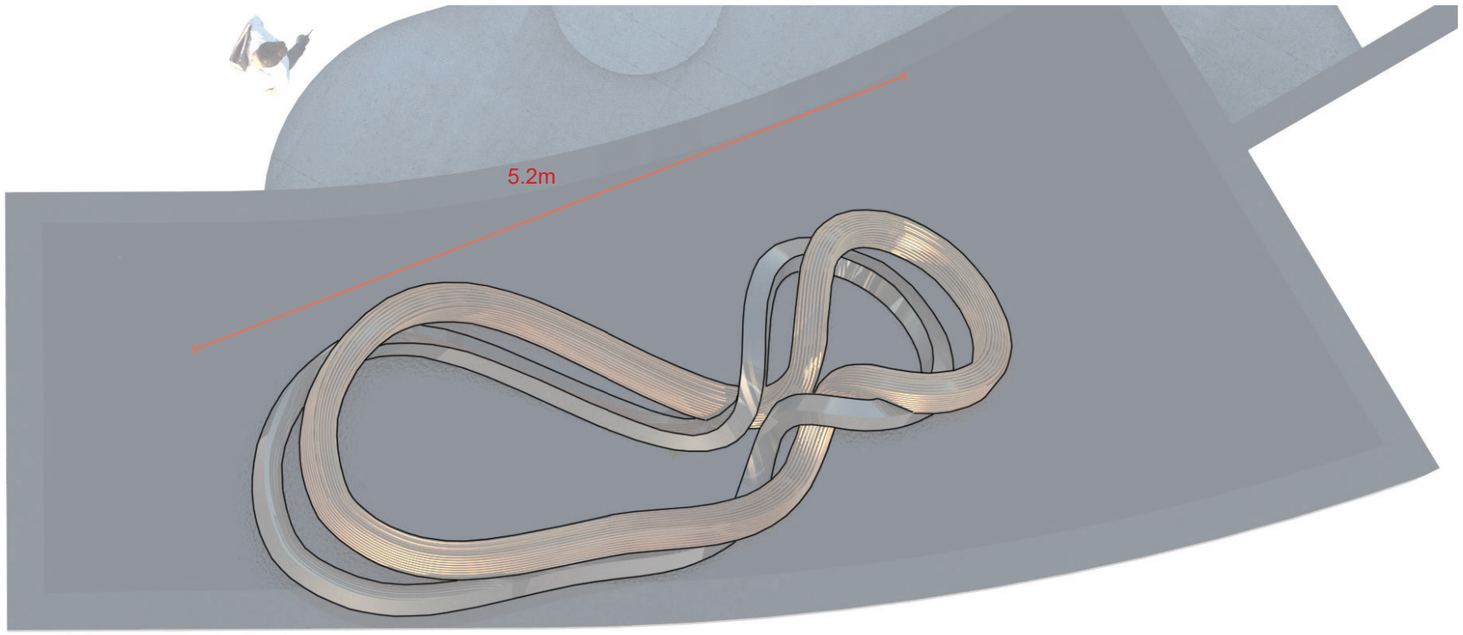


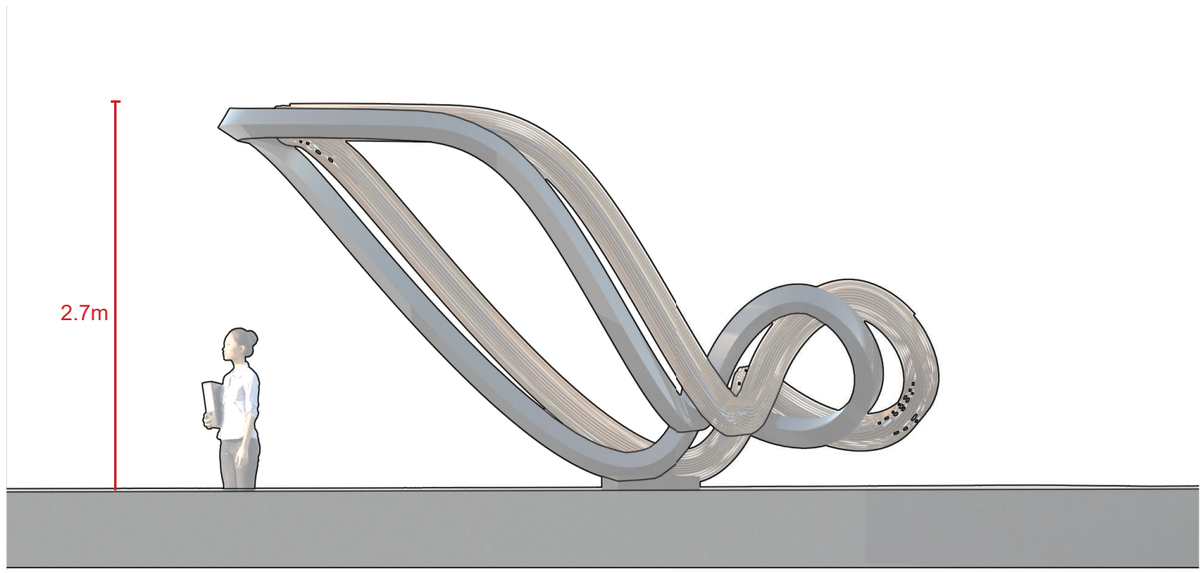


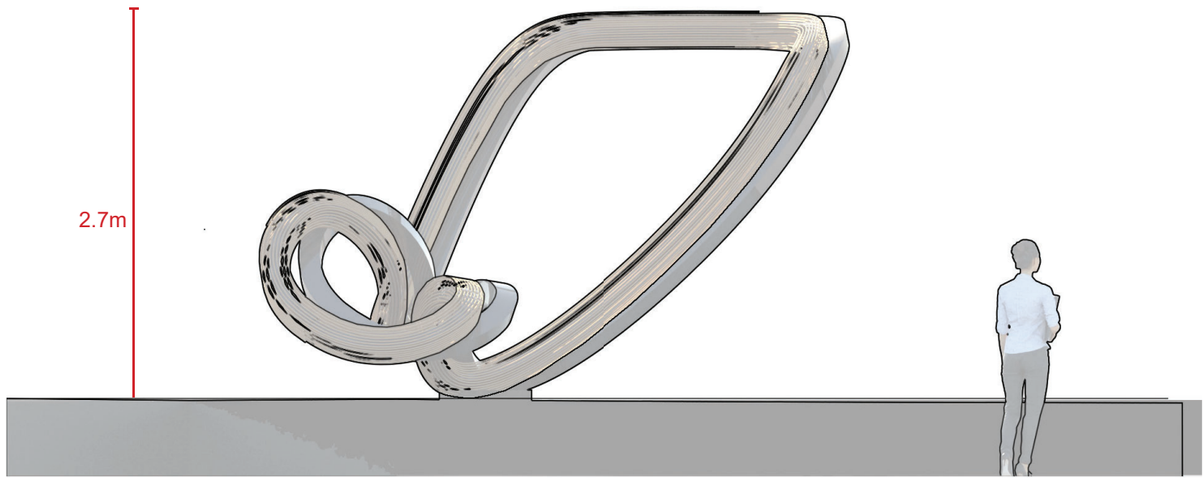


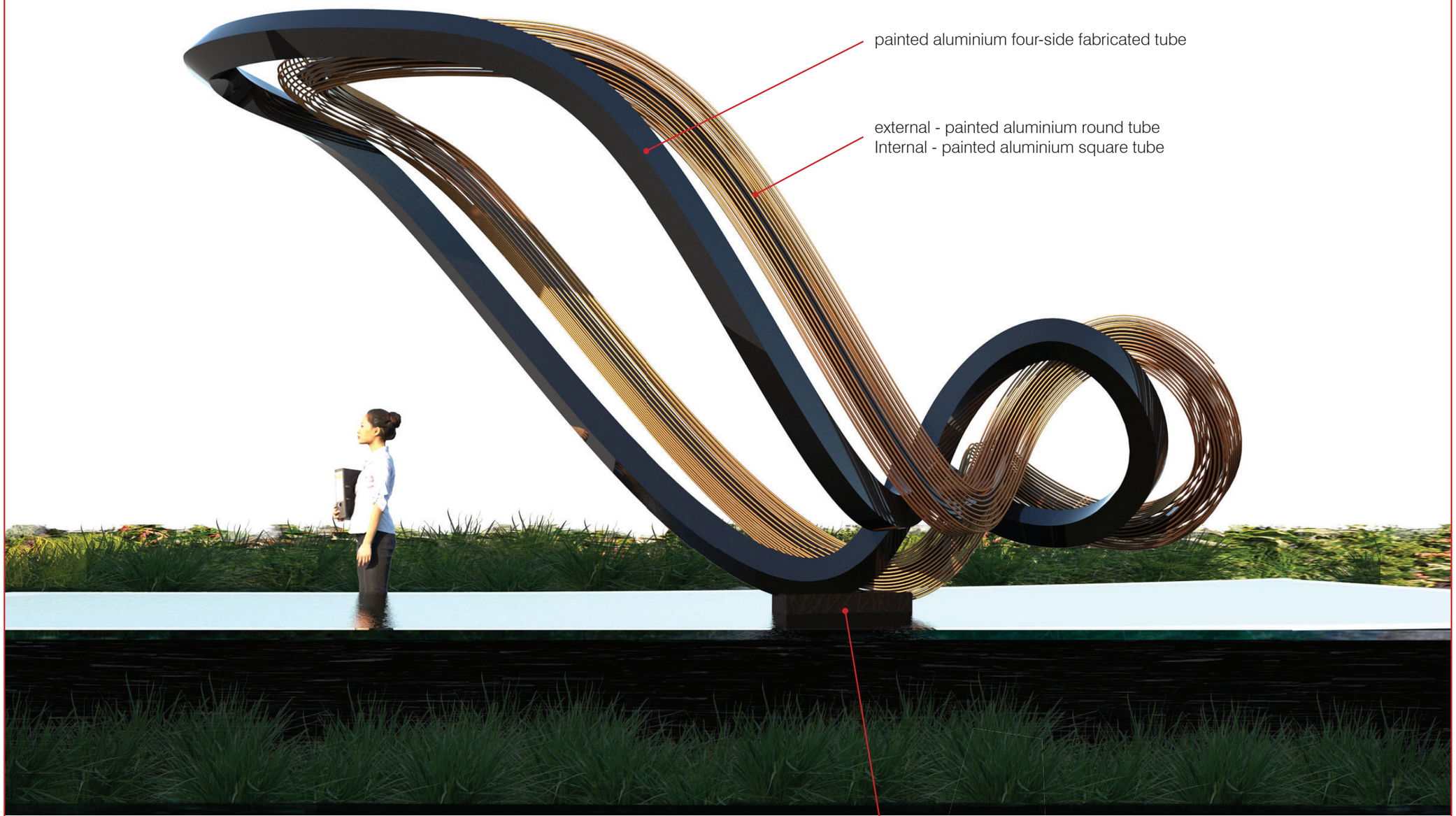


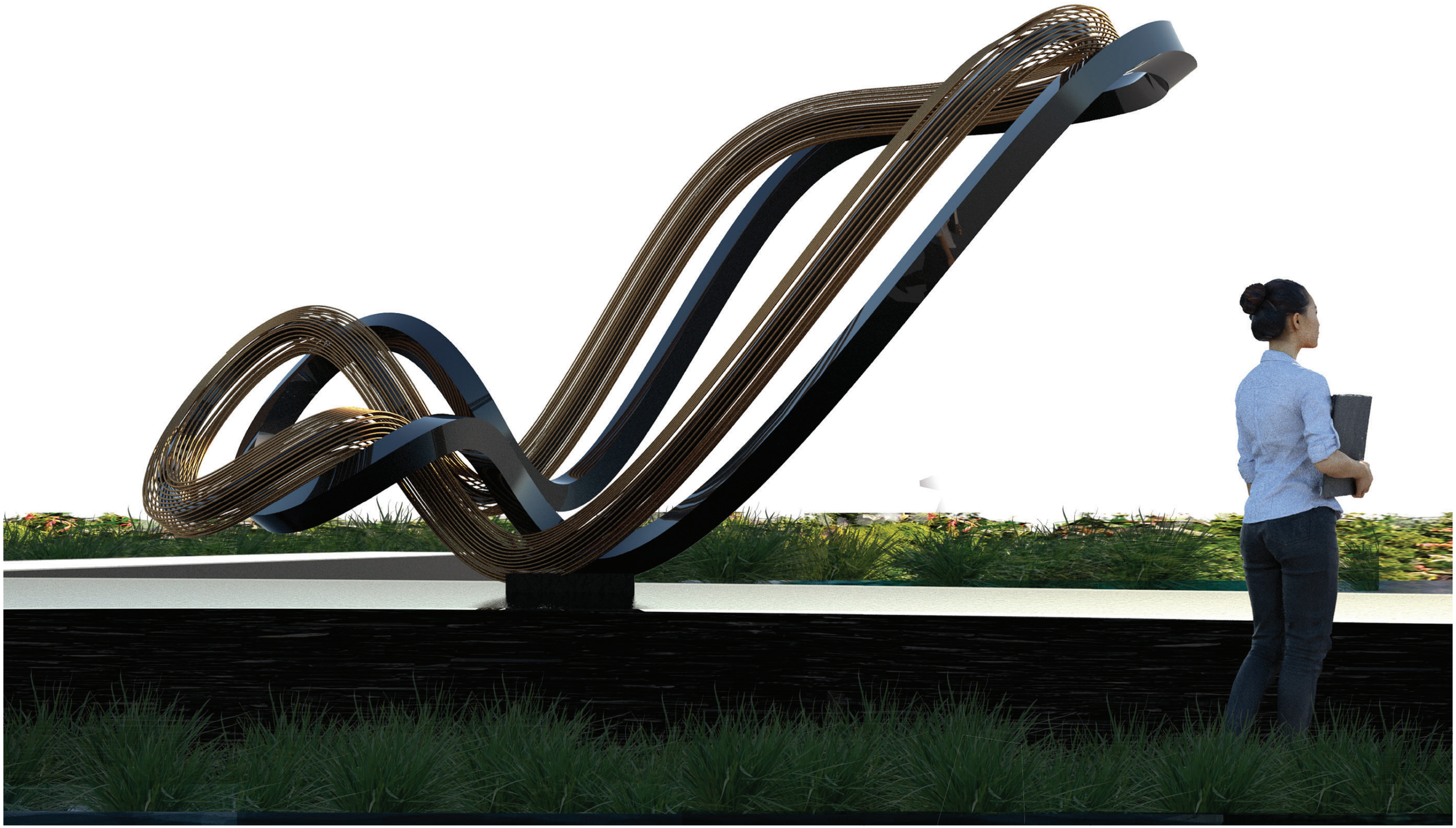
Wren Street

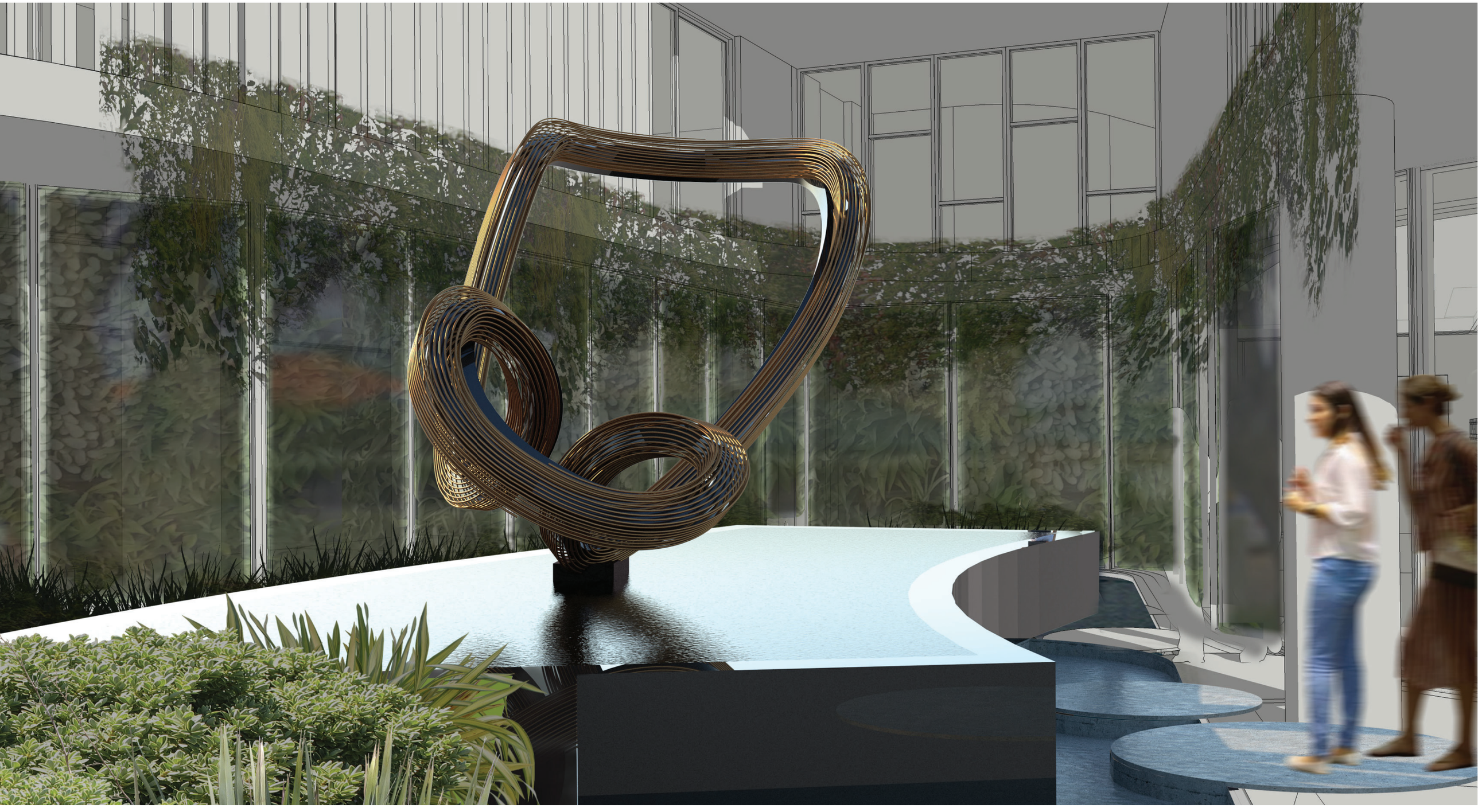












Commissioning process

Big Spoon Art Services would be engaged using as a base the standard Western Australian Government Percent for Art Commission Agreement.

Big Spoon Art Services with Stuart Green as lead artist would undertake the further stages;

- Design Development
- Design Documentation and Engineering certification
- Fabrication
- Installation as suitable

	Progress Stage	Milestones
2 weeks	concept development	• Concept development for presentation to council or relevant bodies for approvals
2 months	design development/ documentation	• 50% design development report to client, including preliminary engineering • 100% design development report to client, including documentation and engineering sign off
9 months	fabrication	• Fabrication update to client at 50% completion, including progress photos. Visit to Artist studio if desired. • Fabrication complete.
1 week on site	installation	
2 weeks from installation	record	• Submission of Maintenance Manual before Building practical completion date. • Submission of project record a maximum of 4 weeks from PC.

All dates to be backdated from Practical completion date of the building/ site works. Concept design can be developed immediately on acceptance of contract.

Insured - Big Spoon Art Services Pty Ltd

ABN: 37 133 129 085

Public Liability	$20,000,000
Product Liablity	$20,000,000
Professional Indemnity	$5,000,000
Goods Transit	$200,000
Workers Compensation	As per legislation

STUARTGREEN artist
big spoon art services

	Qty	Each (ex gst)	Total (ex gst)
Concept Design Stage			
Artist Fee	1	$ 3,000.00	$ 3,000.00
		total	$ 3,000.00

	Qty	Each (ex gst)	Total (ex gst)
Design Development Stage			
Artist fee (22%)	1	$ 33,000.00	$ 33,000.00
Desing Dev & Documentaion	1	$ 6,000.00	$ 6,000.00
Engineering	1	$ 3,300.00	$ 3,300.00
		total	$ 42,300.00

Fabrication			
materials	1	$ 10,500.00	$ 10,500.00
fabrication	1	$ 68,500.00	$ 68,500.00
workshop fees and consumables	12	$ 870.00	$ 10,440.00
finsihing, painting	1	$ 6,500.00	$ 6,500.00
fixings	1	$ 560.00	$ 560.00
		total	$ 96,500.00

Lighting - supply only			
LED lighting (in pond uplighighting)	4	$ 650.00	$ 2,600.00
control gear/ LED 24V driver	1	$ 1,200.00	$ 1,200.00
		total	$ 3,800.00

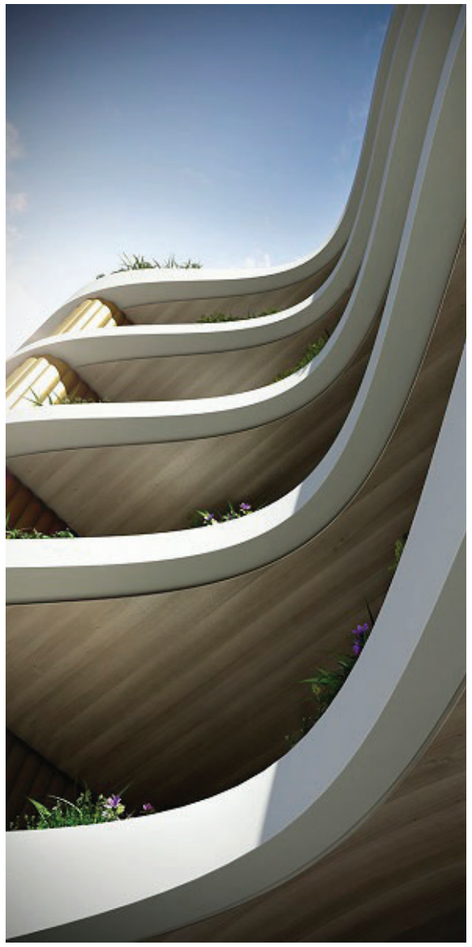
Installation			
transport	2	$ 600.00	$ 1,200.00
crane hire	1	$ 1,200.00	$ 1,200.00
on site install crew	2	$ 1,000.00	$ 2,000.00
		total	$ 4,400.00

TOTAL EX GST	$	150,000.00
GST	$	15,000.00
TOTAL (INCL GST)	**$**	**165,000.00**

Exclusions

any site access or induction fees
pond and associated works construction or supply
pond concrete upstand/plinth and upstand facing for sculpture
all electrical supply and installation (luminaires only supplied by artist)
site fencing and or any traffic management
Council or any other Authority permits

STUARTGREEN artist
big spoon art services



PRINCIPLE 10_

AESTHETICS

- The overall built form composition has been carefully considered to respond to the surrounding context, both existing and future as the surrounding area develops in line with the CBACP.
- The form utilises a contrasting palette of charcoal, white, timber and glass
- Landscaping is incorporated throughout the building, with the cascading planting employed in a material sense
- Fine grain textures are applied to lower levels for maximum community benefit
- The sculptural undulation is inspired by the distinct forms of the bird life of the Canning River.

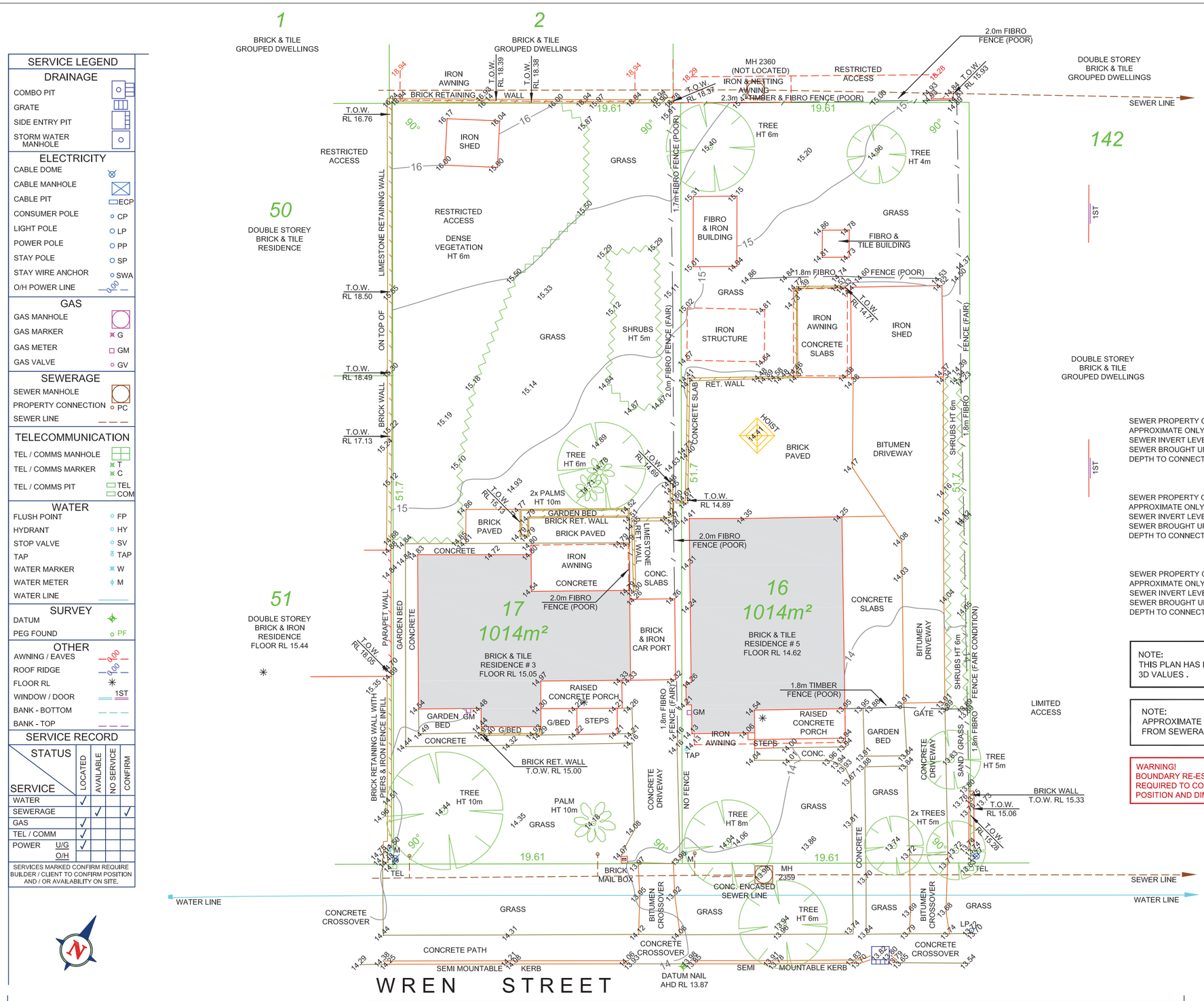
SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

SANCTUARY APARTMENTS
3-5 WREN STREET, MOUNT PLEASANT

MJA studio

APPENDIX I: ARCHITECTURAL DRAWING SET



SERVICE LEGEND

DRAINAGE
- COMBO PIT
- GRATE
- SIDE ENTRY PIT
- STORM WATER MANHOLE

ELECTRICITY
- CABLE DOME
- CABLE MANHOLE
- CABLE PIT — ECP
- CONSUMER POLE — CP
- LIGHT POLE — LP
- POWER POLE — PP
- STAY POLE — SP
- STAY WIRE ANCHOR — SWA
- O/H POWER LINE

GAS
- GAS MANHOLE
- GAS MARKER — G
- GAS METER — GM
- GAS VALVE — GV

SEWERAGE
- SEWER MANHOLE
- PROPERTY CONNECTION — PC
- SEWER LINE

TELECOMMUNICATION
- TEL / COMMS MANHOLE
- TEL / COMMS MARKER — T, C
- TEL / COMMS PIT — TEL, COM

WATER
- FLUSH POINT — FP
- HYDRANT — HY
- STOP VALVE — SV
- TAP — TAP
- WATER MARKER — W
- WATER METER — M
- WATER LINE

SURVEY
- DATUM
- PEG FOUND — PF

OTHER
- AWNING / EAVES
- ROOF RIDGE
- FLOOR RL
- WINDOW / DOOR — 1ST
- BANK - BOTTOM
- BANK - TOP

SERVICE RECORD

SERVICE \ STATUS	LOCATED	AVAILABLE	NO SERVICE	CONFIRM
WATER	✓			
SEWERAGE		✓		✓
GAS	✓			
TEL / COMM	✓			
POWER U/G	✓			
POWER O/H				

SERVICES MARKED CONFIRM REQUIRE BUILDER / CLIENT TO CONFIRM POSITION AND / OR AVAILABILITY ON SITE.

REV	DESCRIPTION	DRN	DATE	APP

LOT : 16 (# 5) & 17 (# 3) WREN STREET
SUBURB : MOUNT PLEASANT — PLAN 5031
AUTHORITY : MELVILLE — C/T : 1124 / 600 & 1150 / 540

BUILDERS / CLIENTS: SITE SURVEY only. The information shown on this plan is current as at the date of survey. Boundary Information, easements etc. to be verified from the Certificate of Title, Plan / Diagram or a Boundary Repeg. Boundary position approximate only. Location of boundary pegs or fences in relation to the boundary lines are not guaranteed. Sewer / Drainage may vary from schematic presentation, clearances to be checked on site. Services information to be confirmed with relevant AUTHORITIES. For underground services - ring "DIAL BEFORE YOU DIG" for confirmation of those services.

SCALE : 1:200 @ A2 Portrait — 5 0 2.5 5 10 15

CLIENT : DEVELOPMENT WISE
SURVEYED ON : 17/09/2018
SURVEYOR : AD — DRAFTER : NP

Land Surveys
19 Brennan Way
BELMONT WA 6104
Telephone (08) 9477 4477
Fax (08) 9477 4499
admin@landsurveys.net.au

JOB No : 1801105 - PLAN: FS - DRG: 001 - REV. A - SHEET 1 OF 1

Z:\3. Survey Projects\2018\1801105 - Development Wise - Wren St Mt Pleasant\03 Delivery\3.1 Drafting\3.13 Feature\1801105-FS-001-A.dwg

NOTE:
THIS PLAN HAS BEEN PREPARED WITH 3D VALUES .

NOTE:
APPROXIMATE AHD LEVEL DERIVED FROM SEWERAGE MANHOLE 2357.

WARNING!
BOUNDARY RE-ESTABLISHMENT SURVEY REQUIRED TO CONFIRM LOT BOUNDARY POSITION AND DIMENSIONS.

MJA studio
LEVEL 1, SUITE 6, 23 RAILWAY ROAD, SUBIACO WA 6008
T (08) 9388 0333 www.mjastudio.net | admin@mjastudio.net

REV.	DATE	AMENDMENT	INIT.
A	30.11.18	DA ISSUE	SB

DEMOLITION PLAN

**ALL EXISTING SITE FEATURES TO BE REMOVED*

CLIENT
DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

PROJECT ADDRESS
3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER
18074

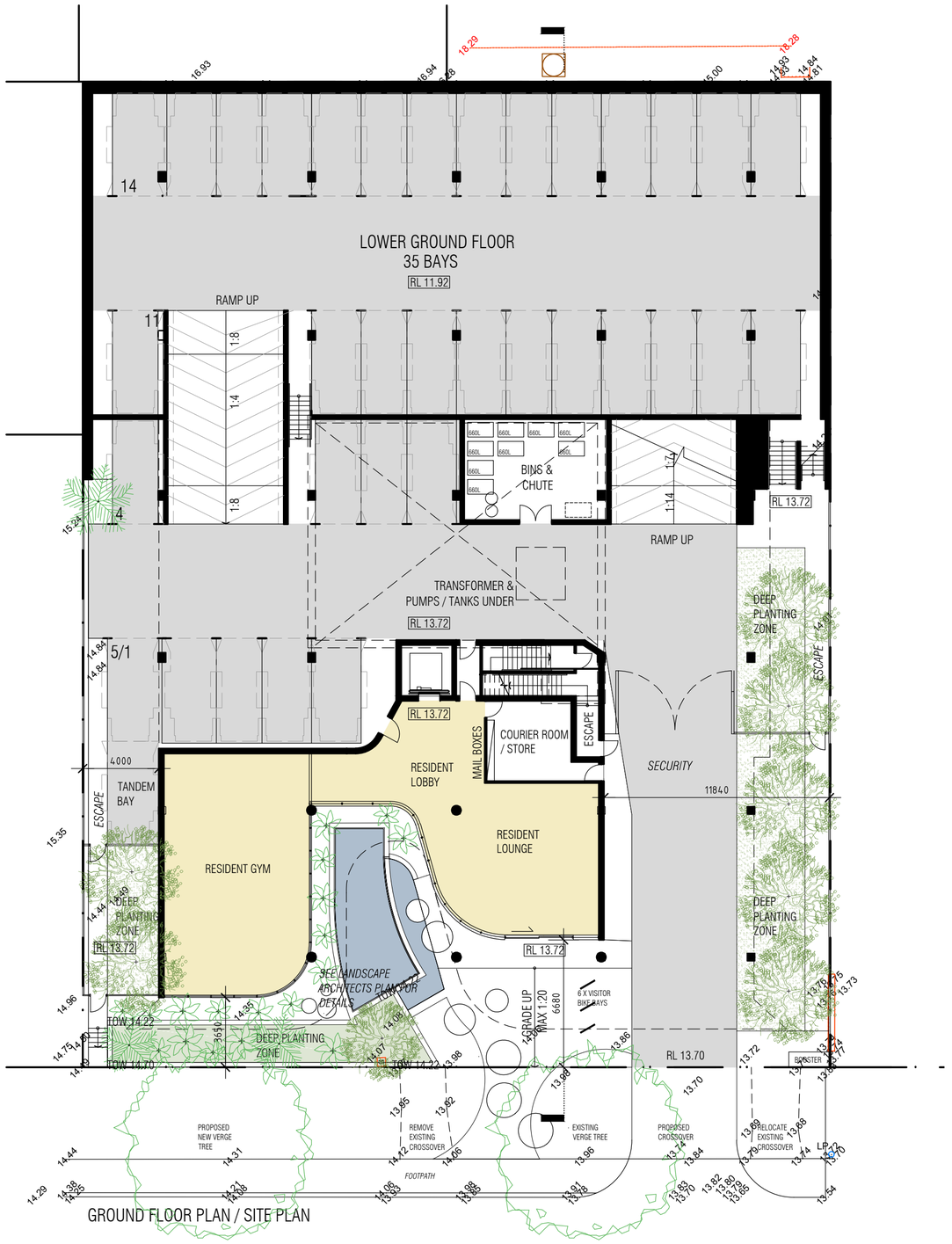
TRUE NORTH — PROJECT NORTH

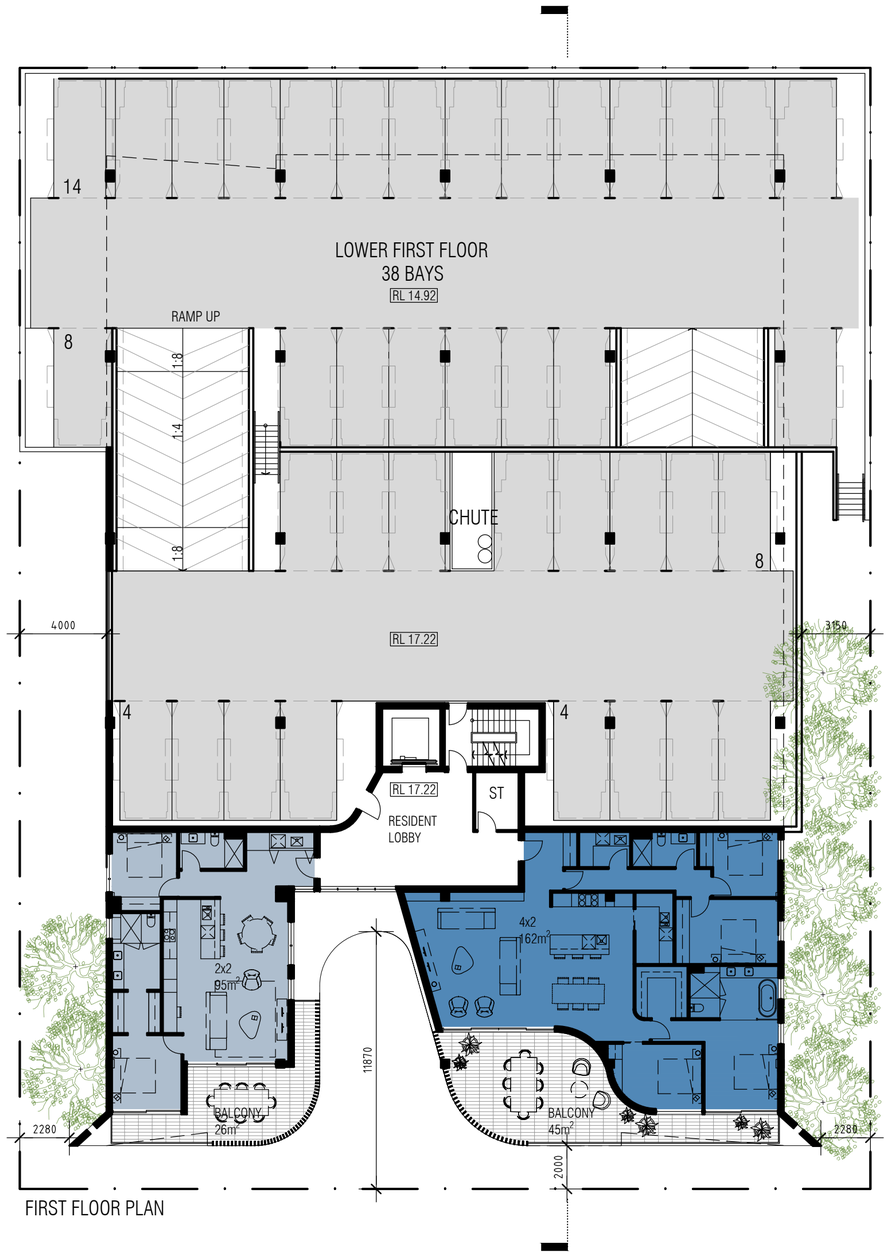
SCALE
1:200 @ A2 — 0 1 2 5

STATUS
DEVELOPMENT APPLICATION

DRAWING
EXISTING SITE SURVEY/ DEMOLITION PLAN

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.00			A





MJA studio

LEVEL 1, SUITE 6, 23 RAILWAY ROAD, SUBIACO WA 6008
T (08) 9388 0333 www.mjastudio.net | admin@mjastudio.net

REV.	DATE	AMENDMENT
A	30.11.18	DA ISSUE

CLIENT
DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

PROJECT ADDRESS
3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER
18074

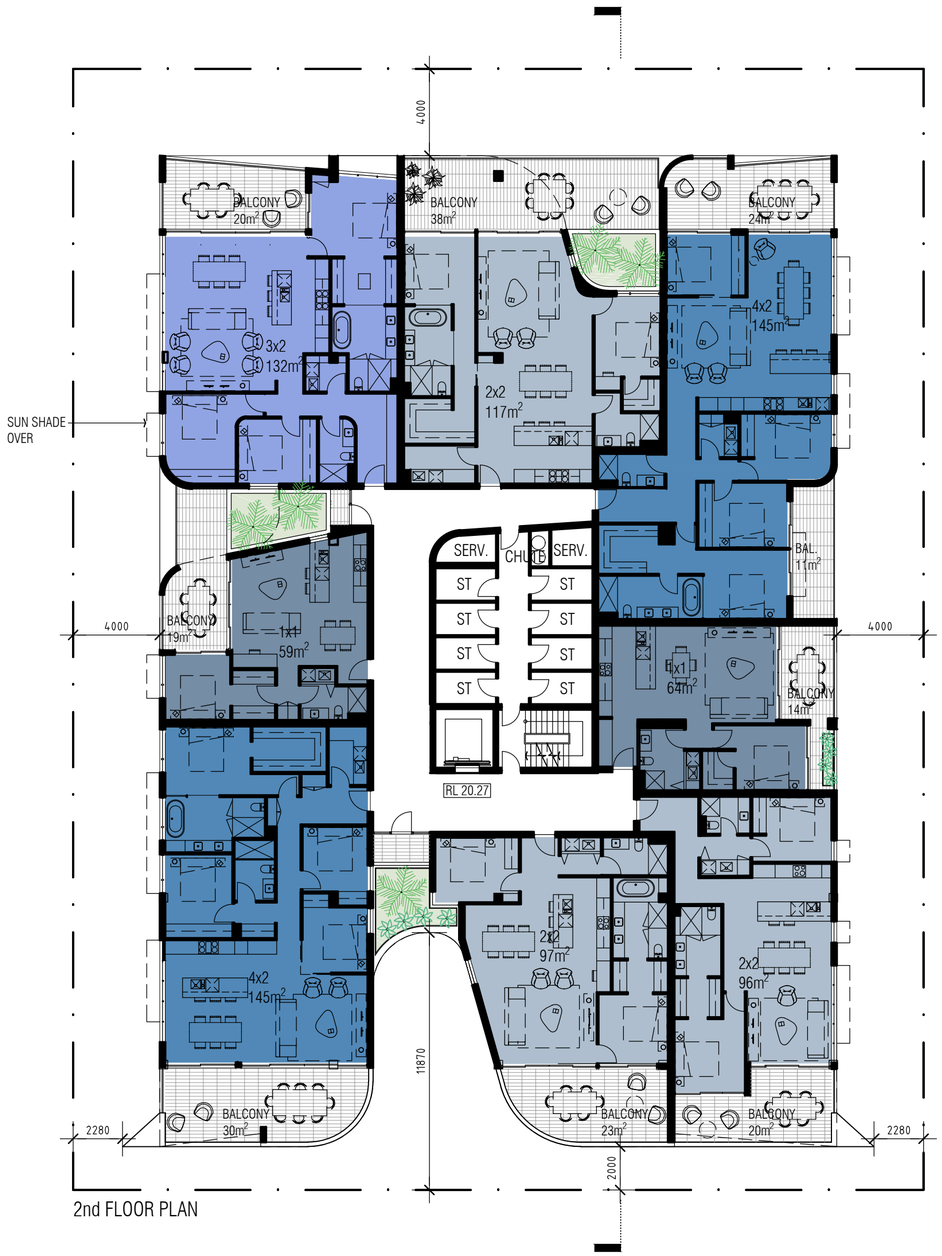
PROJECT STATUS
DEVELOPMENT APPLICATION

TRUE NORTH / PROJECT NORTH

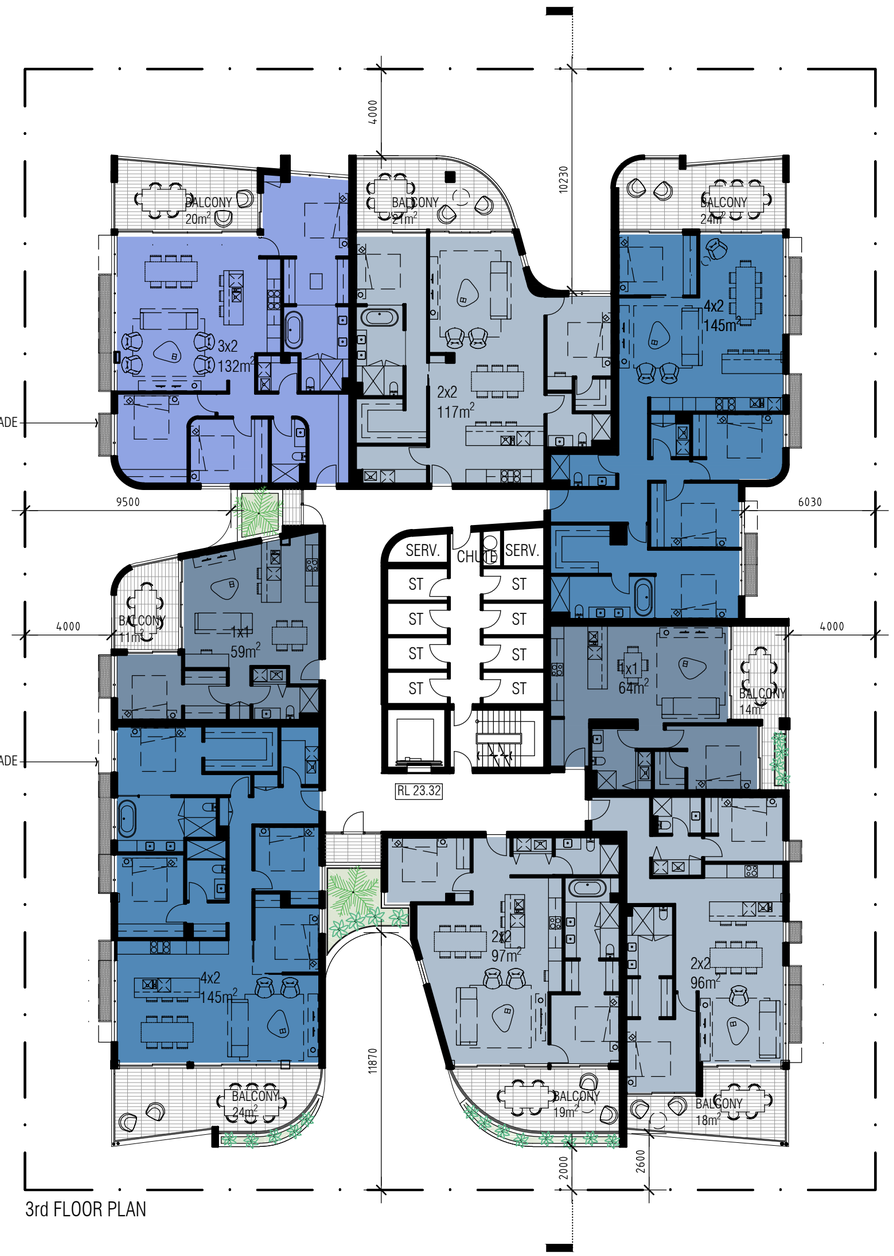
SCALE
1:200 @ A2

DRAWING
FLOOR PLANS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.01	SB	MEC	A



2nd FLOOR PLAN



3rd FLOOR PLAN

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A	30.11.18	DA ISSUE

CLIENT
DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

PROJECT ADDRESS
3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER
18074

PROJECT STATUS
DEVELOPMENT APPLICATION

TRUE NORTH

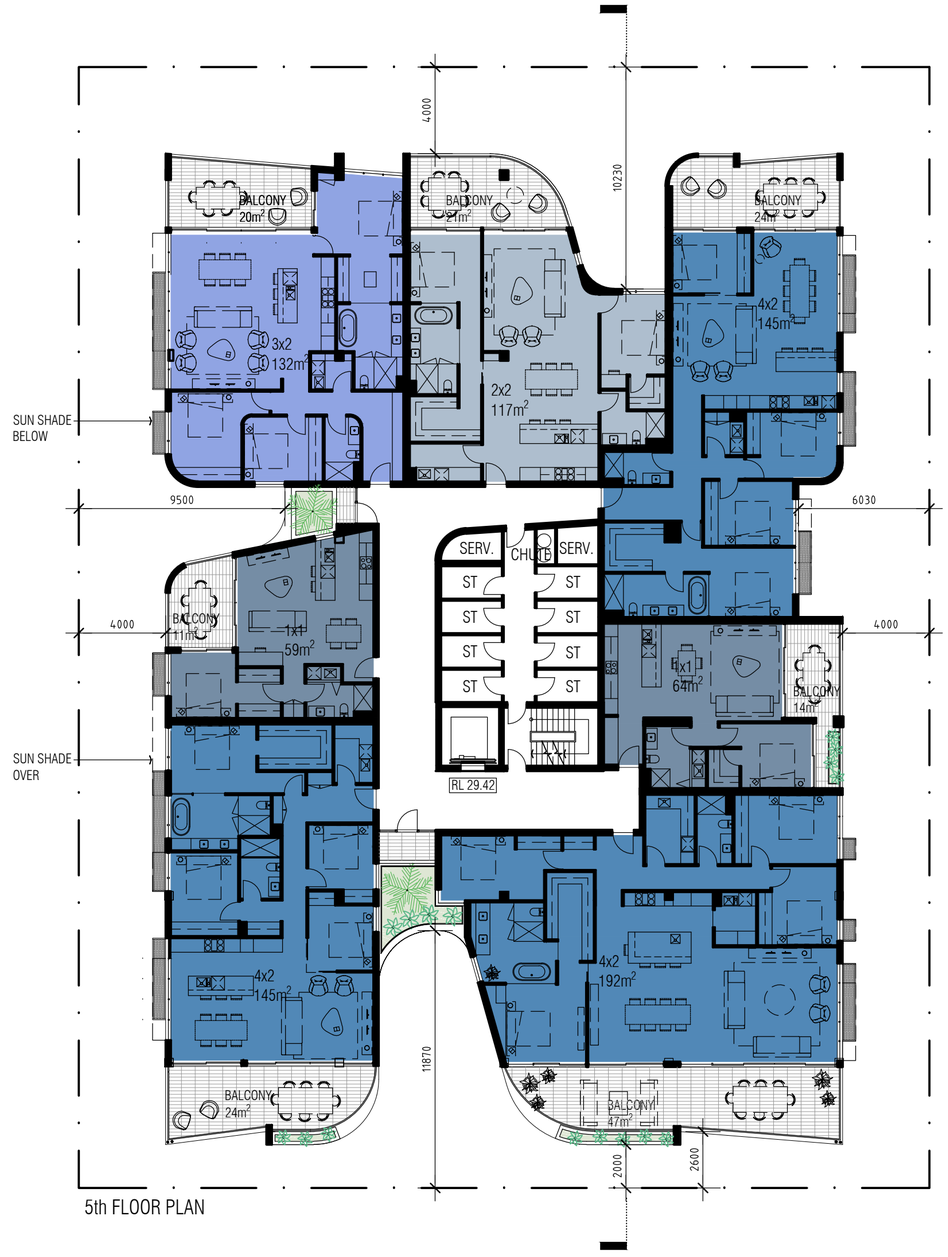
PROJECT NORTH

SCALE
0 1 2 5
1:200 @ A2

DRAWING
FLOOR PLANS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.02	SB	MEC	A

4th FLOOR PLAN



5th FLOOR PLAN

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A	30.11.18	DA ISSUE

CLIENT

DEVELOPWISE

PROJECT

SANCTUARY APARTMENTS

PROJECT ADDRESS

3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER

18074

PROJECT STATUS

DEVELOPMENT APPLICATION

TRUE NORTH

PROJECT NORTH

SCALE

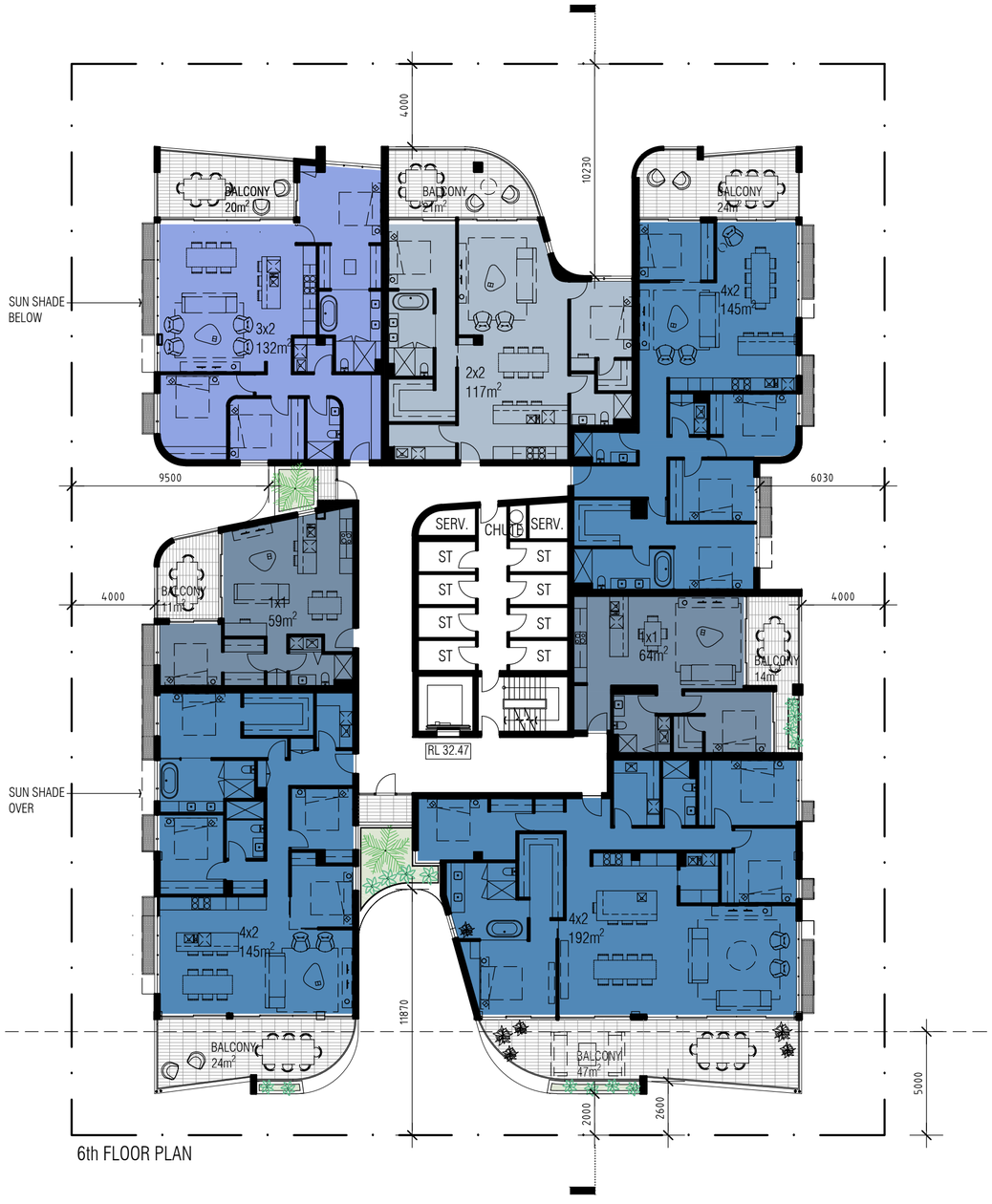
0 1 2 5

1:200 @ A2

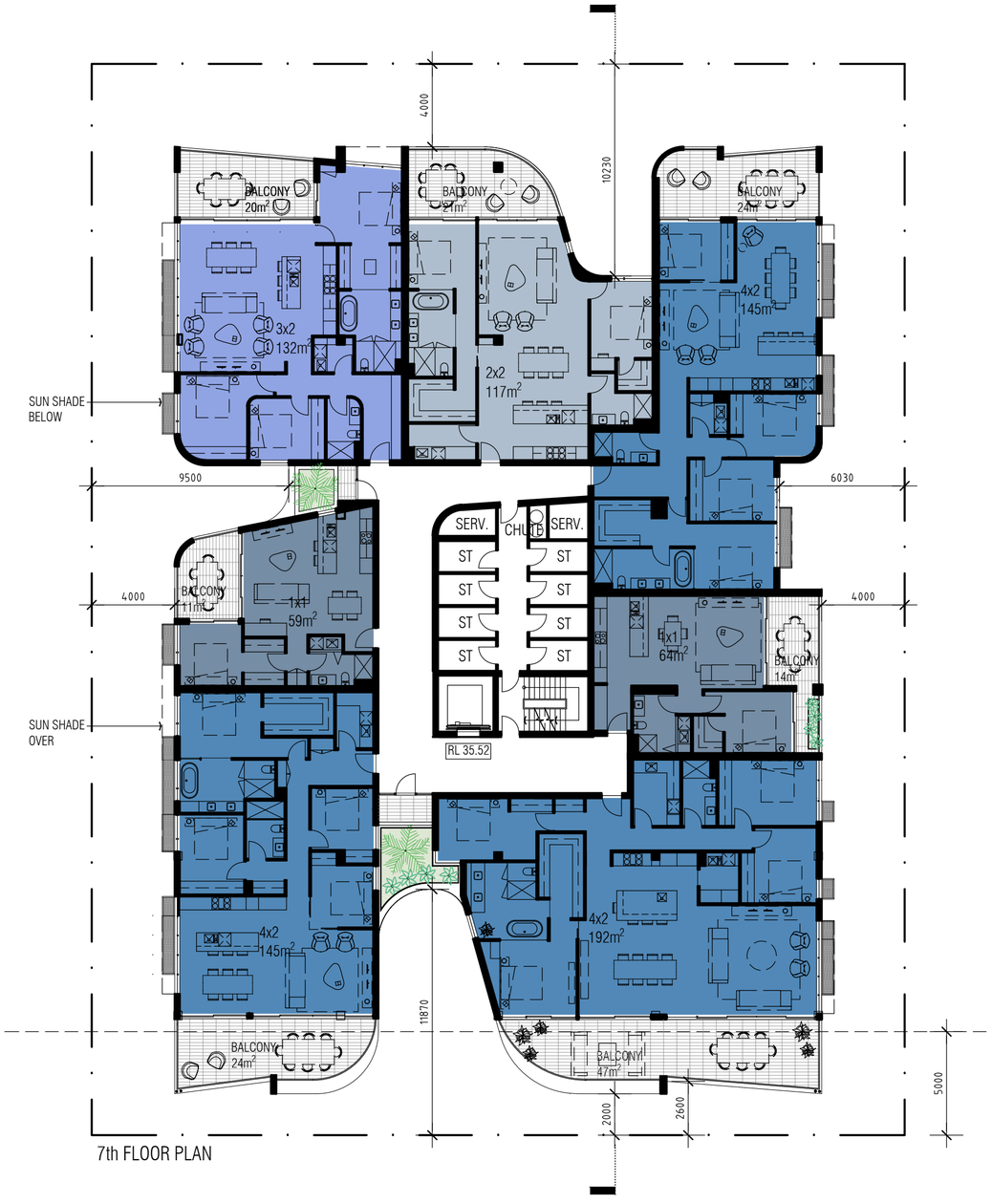
DRAWING

FLOOR PLANS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.03	SB	MEC	A



6th FLOOR PLAN



7th FLOOR PLAN

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REV.	DATE	AMENDMENT
A	30.11.18	DA ISSUE

CLIENT

DEVELOPWISE

PROJECT

SANCTUARY APARTMENTS

PROJECT ADDRESS

3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER

18074

PROJECT STATUS

DEVELOPMENT APPLICATION

TRUE NORTH

PROJECT NORTH

SCALE

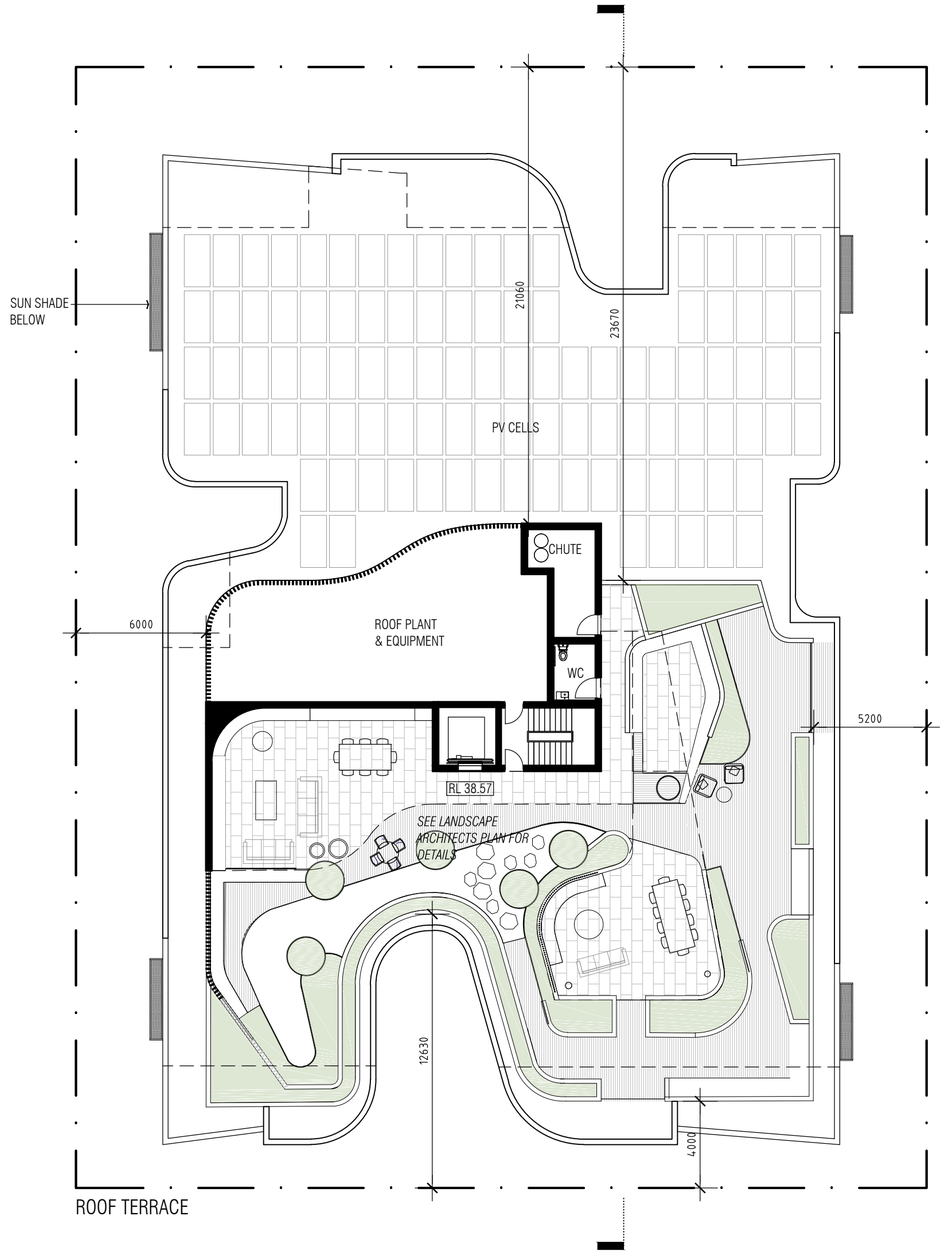
0 1 2 5

1:200 @ A2

DRAWING

FLOOR PLANS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.04	SB	MEC	A



47 APTS

	A	B	C	D	E	F	G	H	I	J	K			TOTAL
	1 X 1	1 X 1	2 X 2	2 X 2	2 X 2	2 X 2	3 X 2	4 X 2	4 X 2	4 X 2	4 X 2			
	59	64	95	96	97	117	132	145	145	162	192			
LG														
G														
1			1							1				2
2	1	1		1	1	1	1	1	1					8
3	1	1		1	1	1	1	1	1					8
4	1	1		1	1	1	1	1	1					8
5	1	1				1	1	1	1		1			7
6	1	1				1	1	1	1		1			
7	1	1				1	1	1	1		1			7
TOTAL	6	6	1	3	3	6	6	6	6	1	3			47
TOTAL STRATA	354	384	95	288	291	702	792	870	870	162	576			5384

Apartment Mix	No	%	Max Bays	Total Bays
1x1	12	25.5%	1.0	12
2x2	13	27.5%	1.5	19.5
3x2	6	13%	1.5	9
4x2	16	34%	2.0	32
	47	100%		72.5 MAX

TOTAL BAYS PROVIDED 72 + 1 TANDEM

ROOF TERRACE

MJA studio

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DEVELOPWISE

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SANCTUARY APARTMENTS

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MT PLEASANT

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18074

PROJECT STATUS
DEVELOPMENT APPLICATION

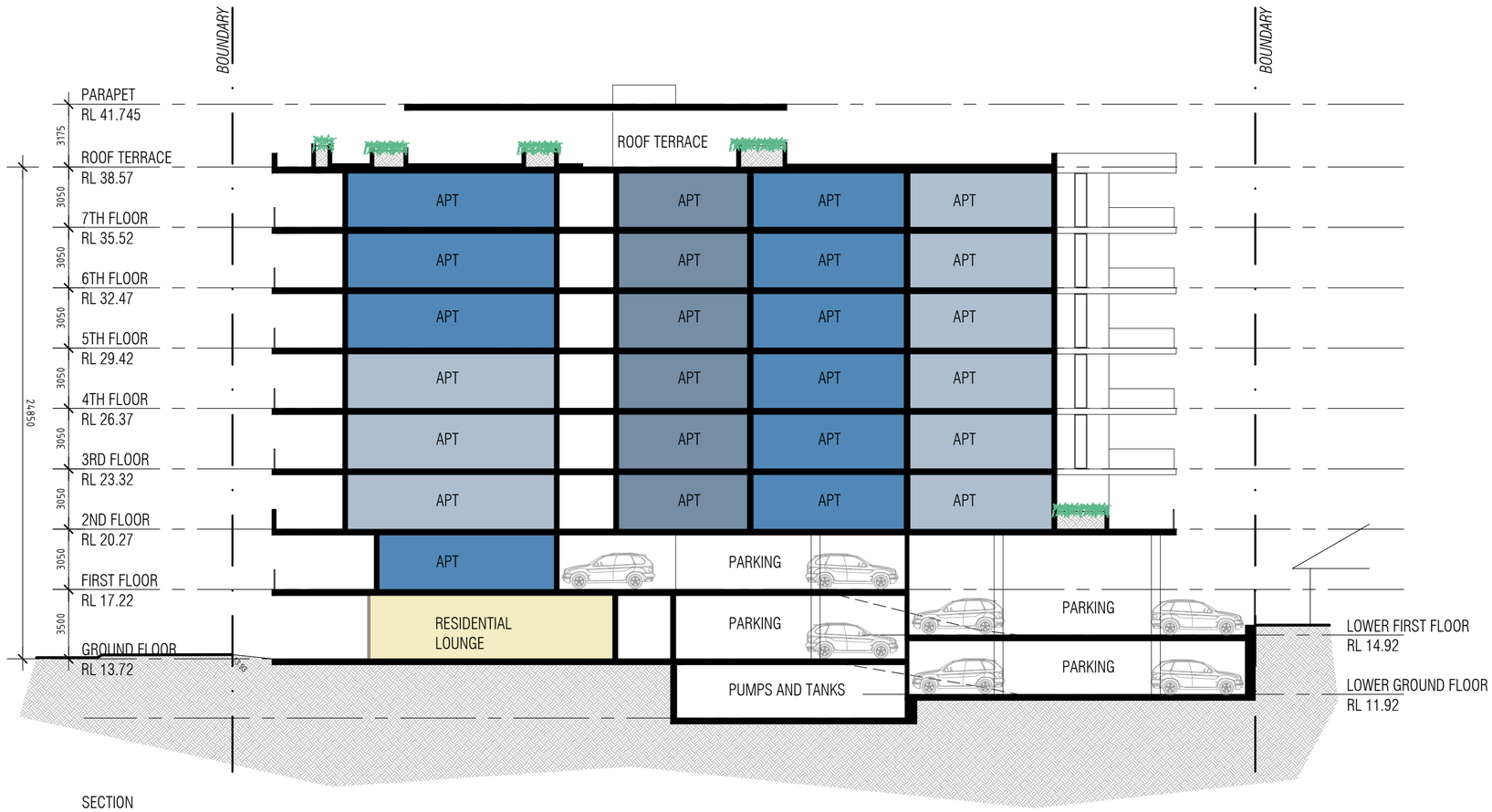
TRUE NORTH / PROJECT NORTH

SCALE
1:200 @ A2

0 1 2 5

DRAWING
FLOOR PLANS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.05	SB	MEC	A



SECTION

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DEVELOPWISE

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SANCTUARY APARTMENTS

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3-5 WREN STREET
MT PLEASANT

MJA PROJECT NUMBER
18074

PROJECT STATUS
DEVELOPMENT APPLICATION

TRUE NORTH | PROJECT NORTH

SCALE
1:200 @ A2

DRAWING
SECTION

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.06	SB	MEC	A

SOUTH (WREN ST) ELEVATION

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A	30.11.18	DA ISSUE

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DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

PROJECT ADDRESS
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PROJECT STATUS
DEVELOPMENT APPLICATION

SCALE
1:200 @ A2
0 1 2 5

DRAWING
ELEVATIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.07	SB	MEC	A

EAST ELEVATION

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DEVELOPWISE

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PROJECT ADDRESS
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MT PLEASANT

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PROJECT STATUS
DEVELOPMENT APPLICATION

SCALE
1:200 @ A2
0 1 2 5

DRAWING
ELEVATIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.08	SB	MEC	A

NORTH ELEVATION

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DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

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3-5 WREN STREET
MT PLEASANT

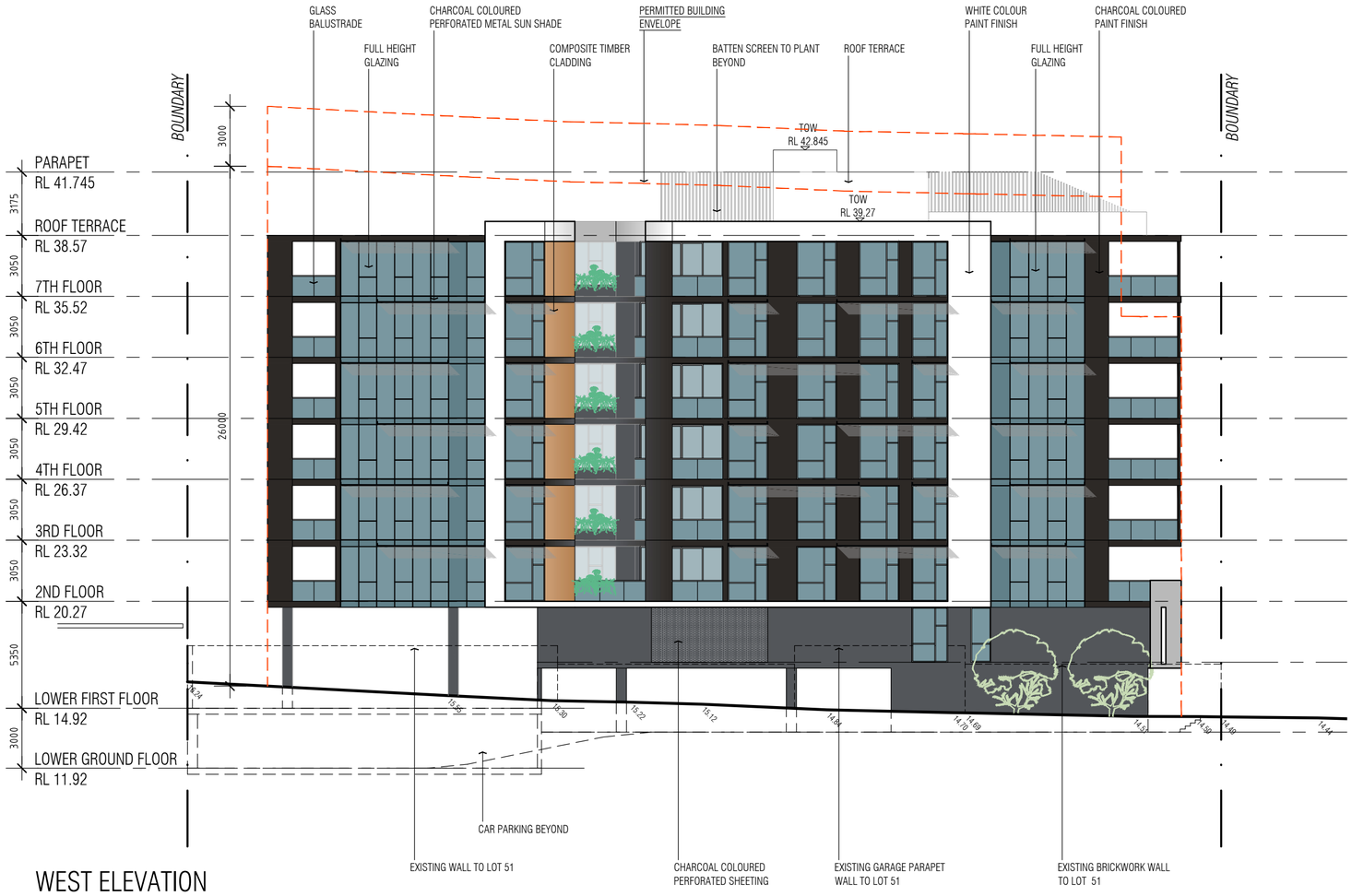
MJA PROJECT NUMBER
18074

PROJECT STATUS
DEVELOPMENT APPLICATION

SCALE
1:200 @ A2
0 1 2 5

DRAWING
ELEVATIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.09	SB	MEC	A



WEST ELEVATION

MJA studio

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REV.	DATE	AMENDMENT
A	30.11.18	DA ISSUE

CLIENT
DEVELOPWISE

PROJECT
SANCTUARY APARTMENTS

PROJECT ADDRESS
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MT PLEASANT

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18074

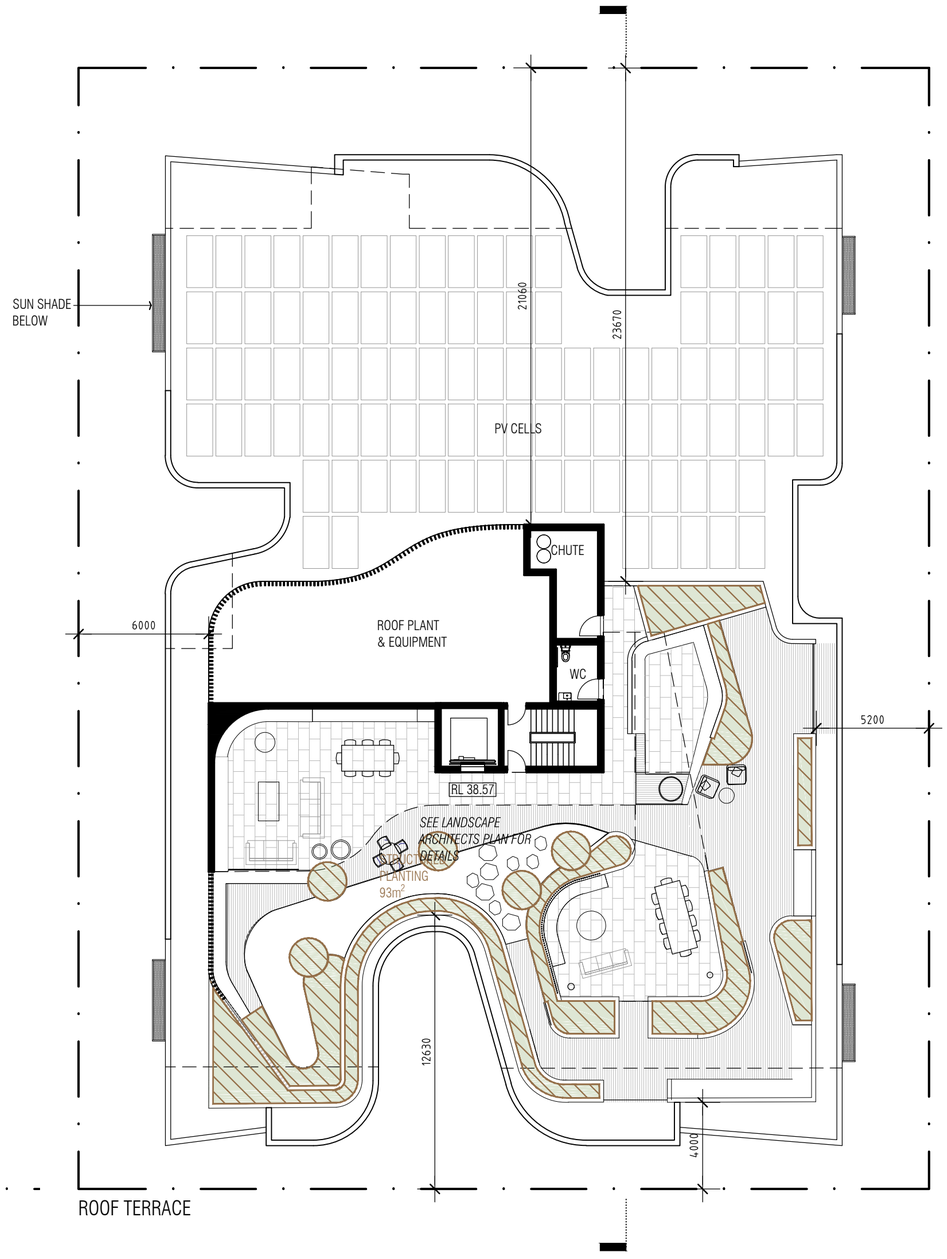
PROJECT STATUS
DEVELOPMENT APPLICATION

SCALE
1:200 @ A2
0 1 2 5

DRAWING
ELEVATIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.10	SB	MEC	A

GROUND FLOOR PLAN / SITE PLAN



ROOF TERRACE

SITE AREA
2028m²

DEEP SOIL AREA:
156m² = 8%

STRUCTURED PLANTING AREA
TOTAL = 226m² = 11%

TOTAL LANDSCAPE AREA = 19%

TOTAL ROOF TERRACE AREA:
480m²
COMMON SPACE AT GROUND:
400m²
TOTAL COMMON OPEN SPACE = 880m²
= 43% OF SITE AREA
(SATISFIES CLAUSE 10.4 OF CBACP)

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PROJECT ADDRESS
3-5 WREN STREET
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18074

PROJECT STATUS
DEVELOPMENT APPLICATION

TRUE NORTH / PROJECT NORTH

SCALE
0 1 2 5
1:200 @ A2

DRAWING
LANDSCAPE CALCULATIONS

DRAWING NO.	DRAFTER	CHECKED	REV.
DA1.11	SB	MEC	A

APPENDIX II: PLANNING TABLE SUMMARY

Local Authority: City of Melville
Quarter: Q2 – Ogilvie Quarter
Land Use, Built Form and Zone: H8 (Residential up to 6-8 storeys)

Element	Applicable Desired Outcome	Applicable Requirement	Proposed Development
1. Land Use	DO 1.2 Uses within the Residential zone will remain as residential only to establish an appropriate buffer between the centre and the surrounding suburb, although some appropriate scale non-residential uses may be considered along the edges of Olives Reserve.	1.3.3 H4 and H8 Zone - Multiple Dwelling, Grouped Dwelling, Aged or Dependant Person's Dwelling, Single Bedroom Dwelling, Residential Building, Recreation - Private, Recreation – Public, Home Occupation, Home Office 1.4.3 (as above)	The proposal for Multiple dwellings meets the requirements of the H4 and H8 Zone
	DO 1.7 All Quarters will comprise a mix and variety of development. Housing should be diverse and affordable, with a mix of options in all areas. Innovative land uses which support the Desired Outcome of each Quarter will be encouraged.	1.13 Dwelling Diversity Development that contains ten (10) or more dwellings shall provide a minimum of 20% and a maximum of 50% of the dwellings as one (1) bedroom or studio dwellings, and shall provide a minimum of 40% of the dwellings as two (2) bedroom dwellings.	Proposed 1 bedroom apartments: 12 dwellings (25.5%) Proposed 2 bedroom apartments: 13 dwellings (27.5%) Proposed 3 bedroom apartments: 6 dwellings (13%) Proposed 4 bedroom apartments: 16 dwellings (34%) By providing a range of one, two, three and four bedroom apartments the development is catering to a range of buyers. A larger portion of 3 and 4 bedroom apartments is proposed to cater for those who can no longer continue the upkeep of a larger property but would like to remain in the area and demand a certain level of accommodation. The applicant believes the diversity of dwellings provided satisfies the desired outcome to achieve a mix and variety of housing opportunities within the precinct
2. Form and Mass	DO 2 Site planning should create attractive streetscapes which respond to human scale. Site planning should encourage a consistent frontage with variation in front setbacks to mark decision points (to support wayfinding), entrances and allow for enjoyable and surprising spaces. Site planning should avoid buildings which do not relate to the street, create excessively bulky single elements or comprise of overly repetitive elements both within the development site and as it relates to the surrounding development (see Figure 6 and Figure 7 and Figure 8).	2.3 Development of any site for the purposes of a building which is greater than 20 metres in height (approximately 6 storeys), shall only be permitted where the land area comprises a minimum of 1200m^2. Amalgamation of adjacent parcels will be encouraged as an appropriate outcome to achieve this scale of development.	The proposed site is an amalgamation of 2 existing lots, with the combined total area of 2028m^2 meeting the requirements for height greater than 20m. The scalloped nature of the proposed built form promotes interest and aids in wayfinding at street level.
3. Heights	DO 3 To ensure that building heights are consistent with the desired scale and built form of the centre and to ensure that the interface between Zones is appropriately managed. Applicants are encouraged to provide variation in scale, bulk and form along the streetscape as per Figure 8.	3.1 Maximum building heights shall be in accordance with Figure 2 Land Use, Built Form and Zones Plan, noting the minimum site area requirements of Clause 2.2 and 2.3.	The proposed development is with the H8 zone. The lot area meets the minimum requirement for height above 20m.
		3.5 For buildings in the H8 Zone, notwithstanding the 8 storey height limit, no building shall exceed 26 metres above NGL. For buildings in the H4 Zone, notwithstanding the 4 storey height limit, no building shall exceed 16 metres above NGL.	The building complies with the 26m height limit. Any projections above the 26m height limit are limited to the lift overrun, roof plant, and walls and roofing associated with the communal roof terrace. These do not exceed 3.0 metres in height above the permitted building height as shown in the Elevations.
		3.7 Notwithstanding Clause 3.5, any H8 Zoned development which is immediately adjoining to the property boundary of a H4 Zoned site shall be designed to reduce impact to the adjoining property by being limited to a building height of 20 metres for that part of the development within 5 metres of the property boundary. The setback of the building can comprise balconies and terraces with open roofed structures. *NB: Building Height is defined in the Interpretation Section of these Guidelines*	The proposal complies with 3.7, with the required setback zone comprising of balconies. The built form addresses the future street pattern through vertical emphasis to upper levels, with a lower datum established to relate to the existing residential context.
4. Street Setbacks	DO 4 To ensure that the setback to buildings contributes to a distinct street character and that the form of multi-level development is sensitive to pedestrian scale. Alternative means to reduce bulk and scale such as green walls and façade articulation are also encouraged.	4.4 All development within H8 Zones in QI and Q2 shall have a minimum 2 metre and maximum 4 metre setback to street boundaries. All development within H8 Zones in Q3, Q4 and QS shall have a minimum 4 metre and maximum 6 metre front setback.	The street setback is varied to create architectural interest and reduce bulk and scale. The minimum street setback is 2 metres, with the maximum street setback up to 13.8 metre on the ground floor. The sculptured façade breaks down the building bulk, as shown in the built form diagrams in the 'Built Form and Scale' section of this report.

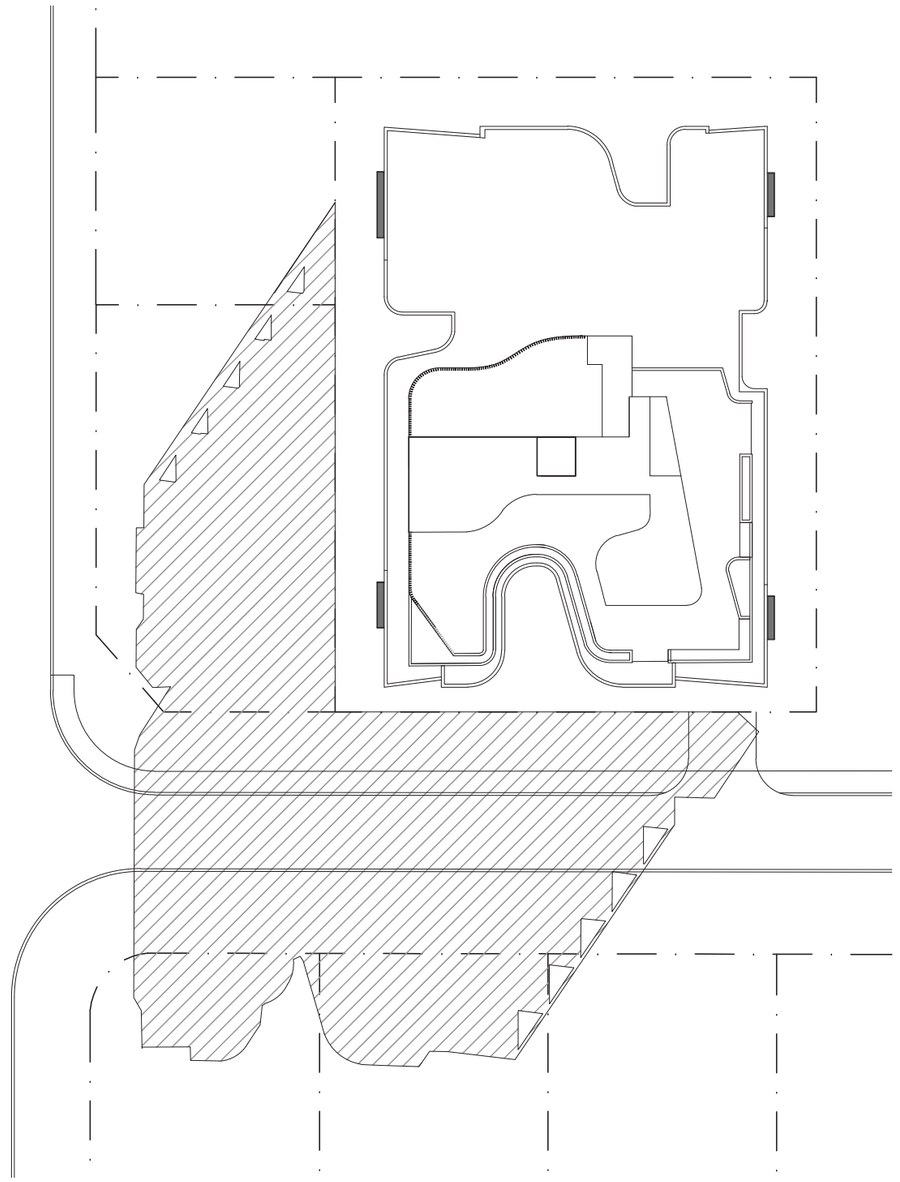
PLANNING SUMMARY
Sanctuary Apartments
3-5 Wren Street, Mount Pleasant

		4.8 Where a street setback is required, the setback area shall be activated and/or landscaped.	The ground floor glass line is setback to provide a covered entry way and create an activated landscape zone. The gym to the ground floor, along with the large extent of glazing ensures passive surveillance from this zone to the street beyond. A sculpture is proposed within this zone, creating additional vision interest. See public art pages of the design report and landscape concept plans.
5. Side and Rear setbacks	DO 5 Developers should consider the amenity of the precinct by minimising overlooking and overshadowing of adjacent and adjoining properties through appropriate design response, supported by the setback provisions of this Element.	5.6 Side and rear setbacks for all development within the H8 and H4 Zones shall be 3 metres for any lot which is less than or equal to 14 metres in width or shall be 3.5 metres for any lot which is greater than 14 metres in width but less than 16 metres in width or 4 metres for any lot which is equal to or greater than 16 metres in width. Setbacks do not apply to any eaves and sun shading devices.	The block has a lot width of over 16 metres, therefore 4m setbacks apply to side and rear boundaries. Sun shades are proposed within the setback zones as permitted by the clause. A minor setback is proposed to the eastern boundary on the first floor. This is an open car parking structure and does not visually impact on the bulk to the side boundary. The adjacent landscaping within the deep route zone will significantly screen this element from the adjoining neighbours.
		5.7 Provisions of privacy and solar access and overshadowing do not apply within the CBACP area.	Sun shades are proposed to a majority of east and west facing glazing elements. These devices also limit views into the apartments from below, reducing the perception of overlooking between neighbours.
9. Facades	DO 9 Development of the centre should respond sensitively to the site and support a sense of place. Development should be pleasing to the eye, be interactive, and provide definition between public and private spaces. Maintaining a strong urban edge with the built form and providing a variety of high quality architectural forms and features will attract people to the centre and establish a sense of place.	9.1 Developments shall be sympathetic to the surrounding environment in composition, proportion, materials, colours and finishes. This includes responding to (not replicating) vertical and horizontal fenestration of adjoining developments and providing responses to elements within the street verge such as bus stops, parking and service infrastructure or service entrances.	Given the drastic change in scale between the existing built environment and that permitted on the site under the CBACP, the built form proposed relates to both the existing and future built context. This is shown in the built form diagrams of the design report. The sculptural elements and material palette take cues from the bird life of the Canning River.
		9.2 Proposed development shall incorporate substantial areas of glazing on street frontages. Glazing shall comprise no less that 50% of any façade at pedestrian/ground level and where opaque signage is proposed on glazing, unimpeded clear glazing shall still comprise greater than 50% of the frontage .	Glazing is proposed along the length of the ground floor, with the sculptural façade further increasing the glazing to the ground floor.
		9.3 Semi active frontages are required in all Residential Zones with a minimum of 35% of the frontage incorporating windows or doorways with passive visual surveillance of the adjacent street at ground level.	The ground floor comprises of the residents lounge incorporated into the resident entry and the residents' gym. These semi active spaces ensure passive surveillance of the ground floor plane.
		9.4 Windows and balconies shall be incorporated into the design of developments above ground level. Balconies shall have a minimum 2.4 metre depth and a minimum area of 10m2, to encourage use.	All balconies comply with the minimum area, with a majority of balconies a minimum $20m^2$. All balconies have a minimum width of 2.4m.
		9.5 Developments shall be designed so as to discourage vandalism by use of materials such as sacrificial paint or architectural features to discourage inappropriate activity.	The extent of glazing to the ground floor discourages vandalism. Security lines are brought as far forward as practical. Anti-graffiti coatings will be applied as required.
		9.7 The internal floor level of any development shall, where possible, have a finished floor level no greater than 500 mm below or above the adjoining footpath or verge level to ensure interaction between pedestrians and the adjoining buildings. Development which fronts a street with differing levels should consider innovative design to meet this requirement.	The maximum difference between the internal floor level and the adjoining footpath is 650mm. This occurs at the very western end of the ground floor. This level change is managed through landscaping features which integrate with the glazing to the residents' gym. The landscaping adjacent to the gym filters views, creating a comfortable space to exercise, while the full height glazing ensures passive surveillance in additional to abundant natural lighting within the space.
10. Open Space and Landscaping	DO 10 In particular, the Guidelines encourage the development of areas that provide opportunities for communal meeting and interaction within the CBACP area	10.4 Development in the H8 Zone shall be provided with a minimum provision of 30% open space which shall be provided in shared common space at ground levels and/or shared common space on areas such as the roof.	The site comprises of multiple open space areas. Ground floor landscape zones $400m^2$ Roof terrace: $480m^2$ Total shared open space: $880m^2$ 43% of site area
		10.6 Where development is not proposed to all boundaries of a site, landscaping design shall be incorporated providing that such landscaping maintains openness and visibility into the development site. Landscaping in the form of hard and soft landscaping can be utilised. Water sensitive design shall be implemented for all landscaped areas	Deep soil zones are proposed to the east and west boundaries, creating the ability for landscaping to create a green screen to the neighbouring properties. See landscape concept plan and Landscape calculations.

		10.7 Landscaping and/or low fencing below 1.2 metres on property boundaries, where buildings are setback from the boundary, shall reinforce the separation between public and private realm.	The separation between the public and private realm is achieved through landscaping and ground floor treatments, with the pedestrian entry clearly legible.
11. Sustainability	DO 11 All developments should follow ecologically sustainable design principles to develop a world class showcase of environmentally sound development techniques. Principles which should be applied include: • Minimise operational and maintenance costs of the development; • Innovative and integrated water resource management; • Reduction in the use of fossil fuel energy by using renewable energy supply sources and employing demand-efficient building techniques and technologies; and • Biodiversity and habitat enhancement through appropriate and native landscaping. Within the Kintail and Ogilvie Quarters (that is the Quarters within the City of Melville) development is expected to achieve a design rating of 4 Stars under the national rating scheme of the Green Building Council of Australia.	11.5 All new development shall be designed to maximise passive solar principles for heating, cooling, ventilation and energy conservation. East and west facing glazing shall be minimised and shading devices shall be employed to reduce heat loads within buildings and reduce the need for air-conditioning systems. All buildings shall be designed to enable access to natural light and cross ventilation. At a minimum, all new development within the Casey, Devilak and Mt Henry Quarters (that is the Quarters within the City of South Perth) shall achieve a 5 Star Green Star design rating and within the Kintail and Ogilvie Quarters (that is the Quarters within the City of Melville) shall achieve a 4 Star Green Star design rating under Green Building Council of Australia. …. In the H4 and H8 areas, as evidence in support of compliance with the required ratings, as a minimum applicants shall submit as part of their development application a report from a Green Building Council of Australia qualified consultant demonstrating that the proposal will achieve the required level of performance. In these areas (H4 and H8) any development approval granted will be conditional upon the development being designed and constructed to include the elements identified in the supporting consultant's report	The apartment plans have been design with solar access and the ability for natural ventilation in mind. Corner apartments utilise the ability for cross ventilation and access to light from two sides. The scalloped built form extends the building frontage, permitting greater access to light for centralised apartments and to internal access ways. The site has long boundaries to the east and west. Sun shades are proposed to a majority of glazing elements within each facade to minimise solar heat gain. A Solar PV array is proposed to the roof A preliminary sustainability assessment has been included as part of the DA application stating how the proposal will achieve 4 Green Star equivalency.
15. Level Changes	DO 15 The centre shall be an inviting and user friendly place for all members of the community and universal access/accessibility shall be provided for all developments in a variety of ways. Blank facades may affect the vibrancy and activity in an area, or encourage graffiti, and as such design should limit this outcome by considering façade treatments such as wall art, landscaping or furniture.	15.1 All proposed retaining walls shall be treated with a non-sacrificial anti-graffiti coating to discourage potential graffiti and/or be decorated in such a way as to reduce the effect of blank facades. Landscaping in front of retaining, street furniture and articulation of the wall itself may be utilised as an alternative way of treating blank walls.	Where blank walls are accessible to the public they will be treated with an anti-graffiti coating as required.
		15.2 All development shall provide universal access in accordance with relevant codes and standards. Innovative design features for ramps are encouraged to make universal access an integral part of design.	The proposed development will comply with the relevant codes and standards relating to universal access.
16. Fencing	DO 16 Fencing should be designed to be aesthetically pleasing to all users who can see it and should be treated in the same way as blank facades (see Element 14).	16.1 All proposed fencing which is visible from a public place shall be treated in the same way as required in Clause 15.1. Fencing shall be of a high quality on both sides.	Fencing is treated as a decorative element and integrated into the building façade..
17. Public Art	DO 17 To provide for an exciting and enticing public realm which supports the extensive growth of the CBACP area. To promote cultural vitality within the CBACP area.	17.1 Artwork associated with all proposed development is encouraged. 17.2 All development which is greater than $1 million in total capital cost of development shall contribute 1.0% of the total capital cost of development to a CBACP wide public art fund. The fund is to be used solely for the development of a strategy and acquisition of public art works to be displayed within the CBACP area. Alternatively the developer may propose to provide on-site public art works which are integrated into the design of the development. Any public art proposed shall form part of the development application to be considered by the Design Advisory Group. 17.3 Notwithstanding Clause 17.2, the total cost liability for contribution to the public art fund shall be capped at $500,000.	The development proposes a sculptural public art element within the front setback. Artist Stuart Green has been engaged. Preliminary concept pages are included within the design report.
18. Parking	DO 18 Parking is an important element to consider for development, and considerable analysis has been undertaken to respond to this need. Parking should be provided to ensure that the CBACP area can provide for its residents and guests, but should balance this need with a need to discourage private vehicle travel generally. Alternative transport is encouraged by way of providing for bicycle parking and storage, and motorcycle and scooter parking. Basement and multi storey car parks can present long blank walls to the street, or a gap with undesirable views into the basement car park, which should be avoided.	18.1 Basement car parking or parking sleaved by other uses is encouraged within the CBACP area. All parking areas shall be well lit and clearly signed. In the M10 and M15 Zones in Q3, Q4 and Q5, all parking areas other than for visitors or commercial deliveries shall preferably be provided in a basement, or if not, then shall be concealed within the building behind residential or non-residential floor space.	Car parking is located at the rear of the building through a series of split parking levels. Consolidating the car parking at the rear permits areas of deep soil planting within the side setbacks. Parking is not visible from the street.
		18.3. Car parking for residential development in Q1 and Q2 shall be provided at a minimum ratio of 0.75 bays up to a maximum ratio of 1.0 bay for each studio or single bedroom dwelling, and a minimum ratio of 1.0 bay up to a maximum ratio of 1.5 bays for each two or three bedroom dwelling, and a minimum ratio of 1.25 bays up to a maximum ratio of 2 bays for each dwelling with four bedrooms or greater.	The number of car parking bays provided satisfies the maximum number of bays required, calculations are provided on the DA drawings

		18.8 Bicycle storage/parking shall be provided for all residential development at a ratio of one bay for every dwelling within a development site, and can be comprised within storage areas required as per Clause 19.5 or in shared parking areas or both.	Bicycle parking is provided within storage areas. 6 visitor bicycle bays are provided within the entry plaza
19. Servicing and Functionality	DO 19 Servicing of the CBACP area should occur outside of busy periods and as a preference should occur via underground or basement service areas. Individual residential developments should be provided with adequate storage facilities for the storage of bikes and other household items. Services design, such as power and gas, should consider precinct wide safety including appropriate physical separation, venting and ventilation as required.	19.3 Developments within the M15, M10 and H8 Zones shall provide for all management of waste wholly within the development site, including the ability for service vehicles to circulate within the development. No on-street waste collection areas are permitted within the M15, M10 and H8 Zones.	A Waste Management Plan has been submitted as part of this development application.
		19.4 Applicants within the M15, M10 and H8 Zones shall provide a Movement Summary in their written Statement of Support which provides the design intent behind the development of the site in relation to pedestrian access points, access to parking and cycling, pedestrian and cyclist pathways, loading areas and waste management.	See Traffic statement and Waste Management Plan
		19.5 All residential developments shall comprise an enclosed, lockable storage area, with a minimum dimension of 1.5m with an internal area of at least 4m2, for each grouped or multiple dwelling(s).	Storage units have been provided on each floor with a minimum dimension of 4sqm.
20. Safety	DO 20 Crime Prevention Through Environmental Design or CPTED uses the built environment to reduce the opportunity for crime, increase the perception of safety perceived by authorised users of a space, while increasing the perception of risk by unauthorised users of a space. Development should promote the safety and security of the public environment. Buildings should overlook streets and other public spaces to promote natural supervision. Blank walls onto streets, or large distances between the footpath and openings are discouraged. In addition, access to daylight should be maximised and a high level of lighting should be provided in all public areas.	20.1 Access to and through a development shall be safe and efficient. Entrances shall be positioned so that all pedestrian movement is adequately lit and directly visible from a public space. Access to and from car parking areas and building entrances shall be adequately sign-posted with provision of good lighting to enable safe out of hours use.	The pedestrian entrance is easily identifiable from the street through the sculptural form and large overhang. Floor to ceiling glazing ensures adequate light throughout the day and night. Lighting will be provided to ensure resident and visitor safety throughout the day and night. The car parking area will be adequately lit whilst ensuring minimal light pollution to surrounding residences. Stair ways between car parking levels will be well lit, with handrails to both sides. Lighting to be further detailed in Building Permit stage. The site is fully secured with swipe control points for resident access.
		20.5 Lighting proposed for all development shall be designed so as to limit the possibility of dark shadows in adjacent private and public open spaces.	Lighting design is to satisfy the objective and will be detailed in Building permit stage.

APPENDIX III: OVERSHADOWING DIAGRAM



EXTENT OF OVERSHADOWING

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CLIENT: DEVELOPWISE

PROJECT: 3-5 WREN ST, MT PLEASANT

TRUE NORTH | PROJECT NORTH | GRAPHIC SCALE: 0 1 2 5 10

SCALE: 1:500 @ A3

DRAWING: OVERSHADOWING DIAGRAM

DRAWING NO.: SK1.01

DATE: 30.11.18

REVISION: A